

Pcounter

**Printer Accounting for
Novell NetWare**

Version 5.22

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Introduction

Welcome to Pcounter - An overview

This version of Pcounter includes NLMs which track printer usage of queues and NDPS/iPrint printers located on Novell NetWare file servers. Features include:

- Counts pages on PostScript, PCL, Ricoh RPCS, Canon Bubblejets, Epson ESC/P, ESC/P2 (inkjet), and ESC/PAGE (laser) printers, including support for TIFF file printing.
- Tracks plot size on PostScript and HPGL/2 plotters.
- Separate pricing for color and monochrome/grayscale print jobs.
- Maintains user account balances using the NDS. Keeps a log file of all print activity.
- Windows users may have a popup window for billing print jobs to clients/job numbers.
- Generate reports on printing activity - by user, group, printer, queue, print server, paper size, or client code.
- Rules based printing for load balancing based on maximum and minimum byte sizes and/or pagecounts - jobs can be deleted, moved to the end of the queue, or moved to another print queue.
- Global (print job configuration) settings for queues: Notify, Form feed, Banner print, Automatically place jobs on hold; Delete old held jobs.
- Individual prices can be set for different paper sizes on the same printer, and print jobs can be discarded which use an invalid paper size.
- Banner pages containing all information about the print job, including the page count and account balance. Banner/separator pages can be custom designed.
- Reject incorrect print job types and incorrect paper sizes.
- Automatically pause all jobs if desired.
- Works with all versions of NetWare 3.11 and later, including NetWare 5.

Additionally, these tools are provided:

PCOUNTER.NLM and PCOUNTDP.NLM

Quick and easy-to-install page count monitors which can be used use with the current printer setup - no need to change anything! Also, Pcounter can spool print data to print servers on the network - saving print server licensed connections and enabling Pcounter to get page counts and status back from the printer.

PCOUNTWI.NLM

An NLM which allows managers to modify account balances, and users to check their account balances using a web browser.

PCONTROL.EXE

Printer/queue management and Pcounter configuration utility.

PADMIN.EXE (Pcounter Administrator) and ACCOUNT.EXE

User and client code management programs, report generator.

PPOPUP.EXE

Workstation popup windows for users to enter client billing/password/additional information for each print job.

WBALANCE.EXE

Utility for users to view their own (printing) account balances.

PADDRESS.EXE

A small login script utility which maps network addresses to NetBIOS (Windows Network) computer names for the Pcounter log file.

PLOTMGR.EXE

Plot manager for batch processing of plot files, includes support for client codes and job scheduling.

Software/Hardware requirements

Software requirements for PCOUNTER.NLM (NDS queues)

- NetWare 4.10 or above.

Software requirements for PCOUNTDP.NLM (NDPS)

- NetWare 5.x or later with NDPS installed.
- Support Pack 6 or later required with NetWare 5.0, or Support Pack 2 or later required with NetWare 5.1.

Software requirements for Win32 utilities

- Windows 9x, NT, or later
- Novell Client 32

Installation file locations

If Pcounter is being used for both NetWare and Windows NT, they can be installed into the same directory. Pcontrol is common for both versions and Setup will separate the platform versions properly so that a single administration point can be used for all NetWare and Windows NT printers.

File locations: (where `d:\Pcounter` represents the Pcounter installation directory)

`d:\Pcounter`

`PCONTROL.EXE, PCTRL-*.DLL, PCONTROL.HLP`

Pcontrol files, shared by Pcounter NetWare and NT versions.

`d:\Pcounter\NetWare`

`PADMIN.EXE, PCOUNTER.HLP, ACCOUNT.EXE, PPOPUP.EXE, WBALANCE.EXE, PLOTMGR.EXE`

Pcounter for NetWare accounting management and client tools.

`d:\Pcounter\NetWare\Server`

`*.NLM, *.BAN`

Files installed to the NetWare server.

NLMs should be located in the `\SYS\SYSTEM` directory.

BANs (banner templates) should be located in the `\SYS\SYSTEM\PCOUNTER` directory.

Important Concepts

Pcounter configurations

- Use Pcontrol to set up configuration settings for servers, printers, and queues. The Novell Client for Windows (formerly called Client 32) is required to run any of the Pcounter administration utilities.
- Printer (non-NDPS) configurations are used by Pcounter to spool data to network printers.
- Most queue configuration options also apply to NDPS printers.
- Queue configurations determine how Pcounter handles each print job serviced in that queue. Many options (such as those pertaining to accounting) are specific to Pcounter, others (Job notify, Banners, Form feed) provide extensions to Novell's printing services, which enable global print job configurations for jobs in selected queues.
- If queue configurations are modified, the Pcounter queue-based NLMs do not need to be restarted. They will need to be restarted however, if queues are added or removed.
- Server configurations are global and affect all queues managed by Pcounter on the server.
- There are 2 NLMs included with Pcounter, PCOUNTER.NLM for NDS queues, and PCOUNTDP.NLM for NDPS.
- To configure a server for NDS queues, browse an NDS tree in Pcontrol and select a server from the context where it is located.
- To configure NDPS, browse an NDS tree in Pcontrol and select an NDPS Manager from the context where it is located.

Types of accounting

- At its lowest level, Pcounter tracks printing based on the logged-in user and records print data in a comma-delimited (CSV) file called PCOUNTER.LOG.
- The cost of each print job is determined from the Pcounter configuration of each queue. Pricing for printers are set on a cost-per-page basis, while for plotters they can be set on a cost-per-area basis.
- Pcounter can optionally maintain account balances (print quotas) for users, where the cost of the print job is deducted from the user's balance. If a user's balance is less than the cost of a print job, then printing access is denied.
- Pcounter can optionally allow users to enter client/billing codes which are recorded with each print job and can be used for billing to third parties/clients for printer or project usage. This is the only feature which requires software to be installed on workstations, and PPOPUP.EXE is the only required file. It can easily be loaded in a login script or placed in a Startup group.

How do the Pcounter queue-based NLMs work?

Pcounter NLMs only work with queues that are located on the file server where they are running. For multiple file server support, it is necessary to run a Pcounter NLM on each file server where queues are defined.

Pcounter requires its own print server object so that it can login to the server and access other network objects such as queues and users. Do not use a print server which is already in use - it should be unique for Pcounter. This will prevent conflicts such as with passwords.

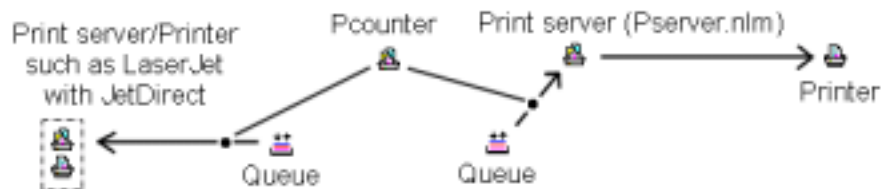
Pcounter will set the form number to 999 and 998 during processing of print jobs. It will restore the original form number when it is finished.

There are 2 methods which Pcounter can use to monitor printing: **Queue monitor mode** and **Pcounter active printing mode**.

Queue monitor mode

The Pcounter NLMs can monitor queues which are already setup for printing and are being serviced by other print servers, making it easy and convenient because it fits right into the current printer setup. (This is functionally equivalent to QCOUNTER.NLM from Pcounter 3.x and 4.x.)

Pcounter intercepts print jobs before other print servers can print them.



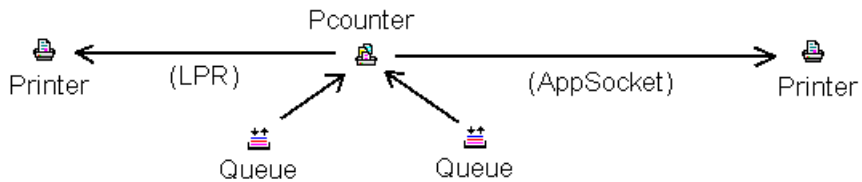
If no other print servers are available to service print jobs (attached to the queue), then Pcounter will stop accounting for jobs until another print server attaches to the queue. When print servers are active, Pcounter releases print jobs one at a time so that they will not be accounted for if they haven't been printed.

How Pcounter handles banners: If a banner template file is configured, then Pcounter will include a nice-looking banner with the print job and turn off the banner flag of the print job. Otherwise Pcounter will turn on the banner flag of the print job, and the print server that services the job will print the banner the way it normally does.

Pcounter active printing mode

The Pcounter NLMs can send data directly to printers on the network using protocols such as AppSocket (raw TCP/IP) and LPR, to another queue, and also to parallel printers on the server. This can enable (with AppSocket) Pcounter to get pagecount and printer status data directly from the printer. This also saves on licensed server connections, as this method does not require other print servers to login to the server or to even have NetWare specific support. (This is functionally equivalent to PCOUNTER.NLM from Pcounter 3.x and 4.x.)

This mode is more efficient than Queue monitor mode and uses less CPU overhead.



For each Pcounter printer it is necessary to assign a port which tells Pcounter which protocol to use and up to 16 queues to service.

The Pcounter NLMs have a limit of 128 printers.

Installing the server files

Pcounter uses the `\SYS\SYSTEM\PCOUNTER` directory for storing configuration and support files.

When SETUP is run to install the Pcounter software on the desktop, it does not install any files on file servers. Likewise, when uninstalling the Pcounter software from the desktop, it does not remove any files from servers.

In order to copy files manually to the server, they are located in `d:\Pcounter\NetWare\Server`, where `d:\Pcounter` represents the Pcounter installation directory. The NLMs should be copied to `\SYS\SYSTEM`, and the BAN files (banner template files) should be copied to `\SYS\SYSTEM\PCOUNTER`.

Otherwise, use Pcontrol to automatically copy the files to the proper locations. In the server Pcounter configuration window, select the **NLM Status** tab and press the **Install server files** button.

NDS version notes (PCOUNTER.NLM)

PCOUNTER.NLM requires NetWare 4.10 or later versions.

To configure a server in NDS mode, browse an NDS tree in Pcontrol and select a server from the context where it is located.

Since bindery is a subset of NDS, PCOUNTER.NLM supports bindery print queues; however, they are accessed and recorded using their NDS names. When using Pcontrol to view print histories and reports from bindery queues which are managed by PCOUNTER.NLM, make sure that the NDS tree and not the bindery queue lists are being browsed.

Print server

PCOUNTER.NLM requires a print server account which it uses to login and manage print queues. **The print server account used by Pcounter should not be in use by other print servers on the network.** Sharing print server names will result in conflicts that may cause Pcounter and the other print server to function incorrectly.

Attribute rights

If Pcounter will not be enforcing user account balances/quotas, then skip this section - but make sure that in the queue configurations, the Accounting setting is set to Log File Only.

However, if quotas are to be enforced, then make sure that the queue Accounting setting is set to User Account Balances and Log File.

Attribute Rights - NetWare 4.x

Unfortunately, NDS does not provide for a global method for allowing objects to modify other objects' Account Balances, except by granting Read/Write or Supervisor rights to All Properties. Therefore these rights must be explicitly granted in order to maintain user account balances.

Attribute Rights - NetWare 5.x and later

NDS in NetWare 5.x does allow inheritance to individual properties. This means that users and print servers can be assigned the rights to modify account balances for all users in a tree or container without being granted any additional rights.

If Pcounter is not granted these rights, then balances will not be modified. Pcontrol provides a method to assign attribute rights to the Pcounter print server - it can grant a print server the ability to modify the account balances of all users in a specified context or of all users in the tree. On NetWare 4.x servers, Pcontrol will grant/revoke Read/Write rights to All Attributes for the Pcounter print server. On NetWare 5.x servers, Pcontrol displays a list of attribute groups to which inheritable rights can be granted or revoked. The (Standard NetWare) attribute group includes Account Balance, Minimum Account Balance, and Allow Unlimited Credit. Other attribute groups shown are corresponding Pcounter custom schema extensions which have been installed on the tree.

If user accounting is specified in a queue's configuration, then Pcounter will complain if it has not been granted attribute rights to a user who has placed a job in a queue it is servicing. In this case the account balance will be interpreted as zero, and it is likely that the job will be rejected, unless the queue has been configured otherwise.

Network permissions granted to the Pcounter print server:

<code>\SYS\SYSTEM\PCOUNTER</code>	Read/Write
<code>\SYS\PUBLIC</code>	Read
Log file location	Read/Write

Passwords

Passwords are supported but not required. However, it is recommended that they be used, as users can login to the network using print server accounts without passwords, enabling them to access NDS (if the Pcounter print server has been granted Attribute rights) and Pcounter data. Pcounter reads the password from the file `\SYS\SYSTEM\PCOUNTER\NLM4X.PWD`.

The PCOUNTER.NLM console

There are 2 screens, one for printer control and one for messages and recent print jobs. If no Pcounter printers are used, then only the message screen will be used.

In the Printer Control screen:

P	Pause/Unpause(Release) printer control
Del	Delete the current print job
R	Restart the current print job
Q	Quit servicing the current job, reset the NLM control for this printer, and bypass accounting
Ctrl-End	Unload NLM
PgUp/PgDn	Next printer screen

The current printer is shown with the > character; use the Up and Down keys to select the current printer.

Upgrading from previous versions of Pcounter

Summary of major differences and new features:

- Pcounter.nlm and Qcounter.nlm have been combined into one NLM.
- Queues serviced are restricted to server where NLM is running.
- Log file can be written to any volume on any file server.
- Log file can be automatically renamed periodically.
- Default queue configurations on file servers can be used as a template for new configurations and/or for existing queues.
- Cross platform (LPD/Mac) print jobs - map file is no longer needed, Pcounter can search the NDS tree for matching usernames.
- Broadcast messages are editable and customizable.
- Popup information is stored in FoxPro DBF, new support for subcodes, 20 selection memory. (Was called Pmax, now called PPopup.)
- Waccount is replaced by PAdmin (Pcounter Administrator).
- PPopup and Wbalance are internationalized in English, French, French Canadian, German, Spanish, Portuguese, Italian, Finnish, Dutch, Swedish, Czech, Danish, Polish, and Norwegian.

NDS/Schema extensions: the Pcounter 4.x schema extensions (from version 4.20 and later) are still in use. It is necessary to apply the new schema extensions before saving Pcounter 5.x configurations.

Pcounter.log: the format of fields have changed. Rename any existing logs to avoid mixing new and old entries. The Readable format has been discontinued.

Queues: Configuration settings will migrate from 3.x to 5.x Bindery and from 4.x to 5.x NDS. However, rules and paper size prices did not exist in 3.x or 4.x - use default server settings for all queues or define them for individual queues. Custom schema balances may be applied to individual queues (instead of one per print server) to enable multiple balances for multiple printers more easily.

Printers: Many unnecessary or outdated settings have been removed. **Jetdirect (TCP)** and **TCP/IP Printer** port settings from 3.x/4.x will migrate to AppSocket on 5.x.

Server global and popup settings: all settings should migrate directly.

On all upgrades: make sure that the Pcounter print server is listed as a queue operator for all queues in service.

From Qcounter 4.x to Pcounter 5.x (NDS): the queues counted list will migrate directly along with the print server being used for Qcounter.nlm.

From Pcounter 4.x to Pcounter 5.x (NDS): the printing configuration will migrate directly along with the print server being used for Pcounter.nlm.

Banners: some of the fields from versions 3.x and 4.x are no longer used. If predefined banners were being used, please select one of the new ones. If custom banners have been created, they may need to be defined again.

NDPS version notes

Background

Pcounter on NDPS is an accounting gateway NLM which has been designed to meet a new specification by Novell (with some input from A.N.D. Technologies) for doing printer accounting within NDPS. Pcounter works along with the NDPS Manager, but does not perform the actual printing - this is still done by printer gateways and it is not necessary for printing to be reconfigured in order to use Pcounter on NDPS.

Pcounter for NDPS uses the same global settings, writes the same log files, uses the same data formats, and has similar printing features as Pcounter for queue-based printing.

All printer configuration information is stored in the NDPS Managed Object Database and not in NDS.

Pcounter 5.x schema extensions are not required by Pcounter on NDPS. However, Pcounter custom schema extensions are supported by Pcounter on NDPS.

The NDPS Manager

Pcounter on NDPS is centered around the NDPS Manager, in the same way that Pcounter is centered around the server for queue-based printing. Pcounter on NDPS shares global settings with Pcounter queue-based printing on the server where the NDPS Manager is located. The NDPS Manager is also the object which will modify user account balances after print jobs if necessary.

Printer Agents

Each printer agent can have accounting turned on or off. If accounting is turned on, then an instance of the Pcounter NDPS NLM (**PCOUNTDP.NLM**) will be automatically loaded when the printer agent is started up. Likewise, the instance of PCOUNTDP.NLM will be unloaded when the printer agent is shut down. PCOUNTDP.NLM will unload completely if all printers with accounting have been shut down, or if the NDPS Manager has been shut down.

WARNING

Do not load and unload PCOUNTDP.NLM manually. Let the NDPS manager handle the loading and unloading of PCOUNTDP.NLM.

To setup Pcounter accounting on a printer agent:

- Make sure that the required support pack is installed. This is Support Pack 6 on NetWare 5.0, and Support Pack 2 on NetWare 5.1.
- Run Pcontrol, select the NDPS Manager, right-click, Pcounter, Configuration.
- On the Printer Agents page, select the printer agent.
- **Configure** the printer settings/prices/rules. Most references to queue configuration settings can also be applied to NDPS printer settings.
- Press **Add accounting** (or **Remove accounting**).
- Shutdown and startup the printer agent.

It is not necessary to restart a printer agent if you make changes to the Pcounter configuration, as the information is read during processing of each print job.

To update the Pcounter NDPS NLM to a later version, you will need to restart all printer agents which have Pcounter accounting turned on, or else unload and reload NDPSM.NLM.

Page counting

The HP and Lexmark printer gateways are able to provide feedback to Pcounter about how many pages were printed (bidirectional page counting) during each job for many of their printers. As of this writing, they are the only gateways which have this functionality. Pcounter will calculate the number of pages in each print job (manual page counting) when used with other printer gateways.

Banners

Since NDPS has support for custom banners, there are no additional features for banners at this time.

Modifying user account balances

If Pcounter for NDPS will be used to manage printing quotas, then it is necessary to grant attribute rights in NDS to the NDPS Manager to modify account balances in each top-level container where Pcounter printer users are located.

- Account balance - Read/Write/Inheritable
- Allow unlimited credit - Read/Inheritable
- Low balance limit - Read/Inheritable

Security

The NDPS Manager changes its own password each time it loads, to prevent hackers from guessing it.

File access permissions

Pcontrol grants the following permissions to the NDPS Manager.

<code>\SYS\SYSTEM\PCOUNTER</code>	Read/Write
<code>\SYS\PUBLIC</code>	Read
Log file location	Read/Write

iPrint Notes

- iPrint allows clients to print to NDPS printers using the IPP protocol. All iPrint printers can be configured for Pcounter support via configuration of their NDPS equivalents.
- When secure iPrint (via SSL) is used, the iPrint client user name passed through as the print job owner. If non-secure iPrint is used, then the job owner typically appears as user@xx-xx-xx-xx-xx-xx, where xx-xx-xx-xx-xx-xx is the MAC address of the client. In that case it will be necessary to use one of the (Global Settings) Cross Platform/LPD options, or the Job Authentication web page via PCOUNTWI.NLM in order to validate/authenticate NDS usernames for these jobs.

Macintosh and Linux clients

- Given that there is no iPrint-specific client software for these platforms, they must print to NDPS printers via non-secure LPR or generic IPP protocols.
- Use one of the (Global Settings) Cross Platform/LPD options to determine the "real" NDS print job owner without user input.
- Use the Job Authentication web page via PCOUNTWI.NLM in order to actively authenticate NDS usernames to NDPS print jobs.

Step by step instructions (Queues)

After running SETUP, run Pcontrol and select the file server where queues are to be monitored. To configure a server in **NDS mode**, **browse an NDS tree** in **Pcontrol** and select a server from the context where it is located.

1. Right click on the server and select Pcounter, Configuration (or press the **P** button on the toolbar to configure the server.
2. Set the Global Settings. If many queues will be monitored, select Default Queue Configuration, which allows default settings to be specified for all queues.
3. (NDS version only) Install the Pcounter schema extensions. If Pcounter will be maintaining user account balances/quotas, make sure that the Pcounter print server has been granted attribute rights in the context(s) where the queue users are located.
4. Set the Popup settings if required.
5. Select the Printing tab. Add existing queues which Pcounter should monitor to the **Queue monitor mode** list. If any queues require individual configurations, rules, and/or prices, set them here. For Pcounter to control the flow of data to printers, **Pcounter active printing mode** printers can be created with ports assigned to them and with queues to service.
6. Press Apply to save changes before loading the NLM.
7. The 60 day trial period will begin after running the NLM for the first time.
8. Select the NLM Status tab. Copy the NLM and banner templates to the server. When using NetWare 4.10 or later, Pcontrol can be used to load and unload the NLM. Otherwise Pcounter is loaded from the file server console command prompt. The command line syntax is:

(NDS Version)
LOAD PCOUNTER

Pcounter can run at server boot time by adding one of the above lines to the `\SYS\SYSTEM\AUTOEXEC.NCF` file.

Step by step instructions (NDPS)

After running SETUP, run Pcontrol and select the NDPS Manager where printers are to be monitored. The NDPS Manager can be found by browsing the NDS tree in Pcontrol and selecting the NDPS Manager from the context where it is located.

1. Make sure that the required support pack is installed. This is Support Pack 6 on NetWare 5.0, and Support Pack 2 on NetWare 5.1.
2. Right click on the NDPS Manager and select Pcounter, Configuration (or press the **P** button on the toolbar to configure the NDPS Manager).
3. On the Global Settings page, select **Install server files**.
4. Set the Global Settings. If many printers will be monitored, select **Default printer configuration**, which allows default settings/prices/rules to be specified for all printers. Press Apply to save changes before loading the NLM.
5. On the Popup page, set the Popup settings if required.
6. Go to the Printer Agents page. For each printer where accounting is required, select it. If a printer needs its own configuration which is different from the defaults set above, press the **Configure** button, and configure settings/prices/rules for the printer. Press **Add Accounting** so that the Pcounter NDPS accounting gateway NLM is loaded along with the printer agent. Shutdown and startup the printer agent to start accounting. The next time the printer agent starts up or the NDPS Manager is loaded, the Pcounter NDPS accounting gateway NLM will also be loaded.
7. The 60 day trial period will begin after running the NLM for the first time.

Server configuration settings

Global Settings

All Pcounter utilities read their default settings from `\SYS\PUBLIC\PCOUNTER.INI` on the default login server. Pcontrol can store these settings on multiple servers, so it is recommended that a copy of PCOUNTER.INI be kept on each server. Users should have read permission to the `\SYS\PUBLIC` directory.

Numerical format

The numerical format determines how costs and balances are displayed.

- **Pages:** One accounting unit = One page. Use this to allocate printing quotas in pages.
- **Currency:** Accounting is kept in terms of local currency. The type and format of the local currency are determined from the Windows international settings on each machine. **(Default)**

Delete held jobs after ? minutes

Held print jobs can be deleted after a specified number of minutes. A value of zero (0) disables this feature.

Jobs counted ahead

This setting can increase Pcounter's speed by counting the specified number of jobs ahead of what is actually printed. Setting a high value might cause unnecessary accounting in Queue Monitor mode if a job gets deleted after Pcounter counts it but before it gets printed. In Active Printing mode this setting should increase overall performance. The default setting is 2.

Always check queue configurations (NDS version only.)

When this feature is enabled, Pcounter will read the queue configuration for each print job, and allows configuration changes to take effect without reloading the NLM. However, this can cause extra network traffic, especially if replicas which contain the queues' NDS information are not located on the server where the NLM is running. Disabling this feature can reduce network traffic, but requires reloading the NLM if configuration changes are made.

NDS Confidence

The NDS Confidence setting dictates the level of reliability desired to fulfill an NDS request. NDS uses a peer to peer mechanism to update object modifications rather than a master/slave relationship. This means that any object modifications can occur on a read/write or master replica and the object modifications will be synchronized with other replicas of that database partition. A master/slave relationship would dictate that all object modifications would occur on the master replica and all synchronization would be pushed to one or more slave replicas of the database partitions. Generally it's **best to leave this setting at Low**, unless there are replication issues on multiple server trees on NDS attributes such as account balances - where account balances appear to have different values in different locations or in utilities such as Pcounter Administrator or WBalance.

- **Low:** NDS requests can be obtained from local caches or any convenient replica. Best performance.
- **Medium:** Results must be obtained directly from a writable replica.
- **High:** NDS requests are sent only to the master replica. Response time can be slow. Use with care. Problems will likely occur if the server with the master replica is down.

This setting will affect Pcounter Administrator, Wbalance, Account.exe, and the NLMs.

Print server

See NDS version notes.

Log location

A record of all print jobs is kept in the file `PCOUNTER.LOG`. It can be located on any volume on any NetWare server, allowing print data for multiple servers to be kept in one location. When Pcounter accesses a remote server, it will use a licensed connection on that server.

If the remote server goes down, Pcounter will keep the log file in the local `\SYS\SYSTEM\PCOUNTER` directory. When the remote server becomes available, Pcounter will automatically reconnect and move any log data stored locally into the remote server's log file.

Pcounter can periodically rename the `PCOUNTER.LOG` file so that each log is separated by time intervals. However, this feature is only supported when Pcounter is running on the server where the log is located. A new log will automatically be created. If Never is selected, then the log file will grow infinitely and it will be necessary to monitor it manually.

See also: **Default Queue Configuration.**

Cross platform/LPD options (Especially for Macs and Linux)

If print jobs are submitted to queues from other platforms where there is no NetWare authentication, Pcounter can attempt any or all of the following methods to assign a valid NetWare NDS print job owner:

- Look up a valid NetWare user name from the server connection table.
- Look up a valid NetWare user name from a map file.
- Search the tree for a valid user account starting at a specified context, which matches the simple LPR or IPP user name.

If a valid NetWare user name is not found, then jobs can be deleted by leaving the **Allow unknown users to print** box unchecked in printer/queue configurations.

Lookup user from server connection table (NDPS only)

This is useful in situations where users have a NetWare volume mounted on the server which is hosting NDPS, such as Macs using Native File Access. Pcounter can compare the IP address from the LPR or IPP client with those in the connection table, and if a match is found, will change the print job owner to a valid NDS user name without any need to search the tree. This method can also be applied to non-authenticated IPP jobs from clients with iFolder volumes mounted.

Lookup user name in map file

It is also possible to map LPR and IPP user names to NDS equivalents using the text file `\SYS\SYSTEM\PCOUNTER\USERMAP.TXT`. Each line should contain one simple name and one fully qualified NDS name. Example:

```
lprname1      user1.ou.org
lprname2      user2.ou.org
ippname1      user3.ou.org
```

Search the tree for a username match (NDPS)

Pcounter will search the tree for the first match to the simple LPR or IPP user name. Searches can be specified to start at a local container in order to reduce search time and overhead.

Search the tree for a username match (Queues)

This is similar to the above NDPS method, except that Pcounter checks first that the print job is owned by a particular object, such as the file server, a print server, or a user, before initiating a search. For example, Novell's PLPD.NLM allows a default user to be specified for all print jobs, if it doesn't map UNIX to NetWare names automatically. Specify a full canonical NDS name for the user.

Messaging

Custom messages can be sent when Pcounter enforces rules or other events, such as when an invalid paper size is sent to a printer or when informing users about their account balances. Messages can be sent via network broadcast messages, SMTP email, or both.

Most messages support the following substitutions:

%P - Printer name
%U - User name
%D - Document name
%B - Account balance

If a rule is enforced, then two message settings are combined into one message - one for the rule itself, and one for the action which was taken. For example, if the action taken on exceeding the byte size limit is to delete the job, the Above byte size message = "Your print document %D exceeded the maximum byte size limit on %P.", and the Job deleted message = "It was deleted.", then the message

**Your print document AUTOEXEC.BAT exceeded the maximum byte size limit on PrinterName.
It was deleted.**

will be sent to the user.

Messages can also be sent to users which inform them about their current account balances. This will only occur if Accounting is set to User account balances and log file in the printer's Pcounter configuration.

SMTP Settings

- **Email address id:** This is the address which is used as identification to the SMTP server. Some SMTP servers require a valid address or domain in order to relay messages.
- **Append domain to username (optional):** The domain is added to the end of the username before sending. For example, if a username is joe.accounting.company and the domain is company.com, then the full email address to which messages are sent will be joe@company.com. Appending a domain may not be necessary if the SMTP server relays messages to local usernames. Pcounter will attempt to look up the user's email address from NDS. If it is available, then that email address will be used instead.
- **Reply address:** If users are to be able to reply to Pcounter email messages, then enter a valid email address for replies.
- **Subject line:** enter an optional email subject, such as "Printer notification message". If left blank, the document name will be used.

Pcounter Schema Extensions (for NDS queues)

Pcounter Schema Extensions are used only to store configurations for NDS queue-based printing, and are not necessary nor used with NDPS. Pcounter uses schema extensions to store queue-based printing configurations by default. See below for instructions on using Pcounter without schema extensions.

Using Schema Extensions

The name prefix PCOUNTER has been registered in the Novell Schema Registry so that no conflicts will occur with other software. PCOUNTER has an OID in Novell's subregistry with a value of 2.16.840.1.113719.2.10.

To add Pcounter schema extensions to NDS, Run Pcontrol using the Admin account for the tree (or equivalent) and choose "Schema Extensions", "Install Schema Extensions" in order to install these extensions on the tree. If Pcontrol reports "Insufficient Rights" when Admin attempts to extend the schema, then it is probable that another administrator must grant rights to extend the schema. Also, Pcontrol reports error codes -603 and/or -325 when exiting the Print Server and/or Queue configuration screens if the schema has not been extended properly.

Description of PCOUNTER Schema Extensions:

Name:	PCOUNTER:Config
Syntax:	Octet String
Constraints:	DS_SIZED_ATTR, DS_SINGLE_VALUED_ATTR, DS_SYNC_IMMEDIATE
Used In:	Print Server, Queue, Printer
Name:	PCOUNTER:Output Queue
Syntax:	Distinguished Name
Constraints:	DS_SINGLE_VALUED_ATTR, DS_SYNC_IMMEDIATE
Used In:	Printer
Name:	PCOUNTER:Queues Counted
Syntax:	Typed Name
Constraints:	DS_SYNC_IMMEDIATE
Used In:	Print Server
Name:	PCOUNTER:Log Server
Syntax:	Distinguished Name
Constraints:	DS_SINGLE_VALUED_ATTR, DS_SYNC_IMMEDIATE
Used In:	Print Server
Names:	PCOUNTER:Prices, PCOUNTER:Sizes
Syntax:	Octet String
Constraints:	DS_SIZED_ATTR, DS_SINGLE_VALUED_ATTR, DS_SYNC_IMMEDIATE
Used In:	Queue
Names:	PCOUNTER:DefConfig, PCOUNTER:DefPrices, PCOUNTER:DefSizes
Syntax:	Octet String
Constraints:	DS_SIZED_ATTR, DS_SINGLE_VALUED_ATTR, DS_SYNC_IMMEDIATE
Used In:	NCP Server

Using Pcounter without Schema Extensions

- Before running Pcontrol, create the registry key **HKEY_LOCAL_MACHINE\Software\Pcounter** if it does not already exist.
- Create a new DWORD value called **BypassSchemaExtensions** with a value of 1.
- This registry setting **should be made on all computers** which use Pcontrol to configure Pcounter.
- Only Pcounter Queue Monitor mode is supported. Active Printing mode is not supported.
- Pcontrol creates an NDS printer object called **PrintServerName: Pcounter Queues Counted**, where PrintServerName is the name of the print server used by Pcounter. This printer object is used to store Pcounter's queue list and is not actually used for any printing. Do not delete this printer object or else Pcounter's queue list will be deleted.
- Queue configuration files are stored in **\\Server\Sys\System\Pcounter\Configs**.

Custom Schema Extensions

The standard NDS user accounting attributes are Account Balance, Minimum Account Balance, and Allow Unlimited Credit. Typically Pcounter will use these attributes for maintaining user account balances. The NDS schema can be extended and custom attributes can be defined for Pcounter to use instead.

Reasons to use custom schema extensions

- To reserve the standard accounting attributes for resources such as connect time and disk storage.
- Different organizations within the same tree can maintain their own separate Pcounter balances.
- To assign separate Pcounter balances for each queue.

The custom attributes

- All custom attributes defined by Pcontrol use the PCOUNTER name prefix.
- Supply a unique keyword of up to 15 characters to differentiate custom schema extensions from others on the tree.
- Each time custom schema extensions are defined, Pcontrol creates 3 new attributes which Pcounter can use instead of Account Balance, Minimum Account Balance, and Allow Unlimited Credit.

The attribute names which are created

- PCOUNTER:YourKeyword Balance (corresponds to Account Balance)
- PCOUNTER:YourKeyword Limit (corresponds to Minimum Account Balance)
- PCOUNTER:YourKeyword Nolimit (corresponds to Allow Unlimited Credit)

For example, if the keyword is Engineering, the attributes will be called

- PCOUNTER:Engineering Balance (corresponds to Account Balance)
- PCOUNTER:Engineering Limit (corresponds to Minimum Account Balance)
- PCOUNTER:Engineering Nolimit (corresponds to Allow Unlimited Credit)

Description of PCOUNTER Custom Schema Extensions

Name: PCOUNTER:YourKeyword Balance
Syntax: Counter
Constraints: DS_SINGLE_VALUED_ATTR, DS_SYNC_IMMEDIATE
Used In: User

Name: PCOUNTER:YourKeyword Limit
Syntax: Integer
Constraints: DS_SINGLE_VALUED_ATTR, DS_SYNC_IMMEDIATE
Used In: User

Name: PCOUNTER:YourKeyword Nolimit
Syntax: Boolean
Constraints: DS_SINGLE_VALUED_ATTR, DS_SYNC_IMMEDIATE
Used In: User

Auto client code

Name: PCOUNTER:Autocode
Syntax: Case Ignore String
Constraints: DS_SINGLE_VALUED_ATTR, DS_SYNC_IMMEDIATE
Used In: User

Default Queue Configuration

In Pcontrol, right click on the server and select Pcounter, Default Queue Configuration.

All queues can be individually configured for Pcounter; however, if many printers need monitoring, it might be easier to setup the default queue configuration once and let Pcounter use these settings for all printers. These default settings are also used as a template for configuring new queues later.

When Pcounter loads, it looks for a queue's individual configuration. If one is not found, then it uses the server's default queue configuration. If the default configuration has not been saved, then Pcounter uses the following settings:

Accounting:	Log file only
Action if below low balance limit:	Print job anyway
Job Notify:	Only if requested
Form feed:	Only if requested
Banner print:	Only if requested
Banner (separator) template:	Blank/None
Duplex Handling:	Ignore
Hold all jobs:	No
Allow unknown users to print:	Yes
Count jobs in advance for display:	No
Delete duplicate jobs:	No
Reject job types:	None
Enable popup window:	No
Keep job held after popup:	No
All paper sizes:	Allowed
All Prices:	Zero
Default paper size:	Letter

Printer configuration settings

AppSocket Port

AppSocket is raw printing using the TCP/IP protocol. Many network printers support AppSocket: the advantage of using it is that Pcounter can obtain print job pagecounts from the printer (called **bidirectional** page counting) without having to calculate the page count itself (called **manual** page counting) - this reduces CPU utilization on the printer host. The disadvantage is that bidirectional counting requires more time for each job, as Pcounter must wait for the job to finish before getting the page count from the printer.

Specify a TCP/IP port number in the configuration. The most common port number is 9100, which is supported by Xerox, HP, and Lexmark printers. External print servers can use separate port numbers for each parallel port on the print server - for example, the HP JetDirect EX+3 uses ports 9100, 9101, and 9102.

Pagecount types

- **Manual:** Pcounter calculates the pagecount of the print job.
- **PJL Bidirectional:** Pcounter uses PJJ commands to get the pagecount from the printer. While many printers support PJJ, they may not all support PJJ bidirectional page counting.
- **PS/PJJ Bidirectional:** Pcounter uses PostScript commands to get the pagecount from the printer, which are separated by PJJ to get job status. This choice is probably the best if the printer supports PostScript and PJJ.
- **PostScript Bidirectional:** Pcounter uses PostScript commands to get the pagecount from the printer. This method is very dependent upon timing, and not all printers/PostScript interpreters act the same.

Test whether the pagecount type is supported when the port is being configured. However, especially when using PostScript Bidirectional, watch the pagecounts from the first few jobs to make sure that the timing is correct.

LPR Port

LPD/LPR is a standard which is supported by most network printers and operating systems, and uses the TCP/IP protocol. Use Pcounter to print to printers with network connections and to computers running LPD software which are hosting printers, such as Windows NT, UNIX, and NetWare.

All page counting is manual when using LPR.

Specify a printer name in the configuration. On networked printers, often it is called "RAW", although sometimes it doesn't even matter! However, on LPD computer hosts, the administrator will have given it a specific name, which it is necessary to determine.

Count partially sent/interrupted print jobs

If the LPD host is a printer, then incomplete jobs are likely to print anyway, as most printers start printing as soon as they begin receiving data. However, if the LPD host is a computer, then incomplete jobs are likely to be deleted from its queue. Check this box for Pcounter to count incomplete jobs.

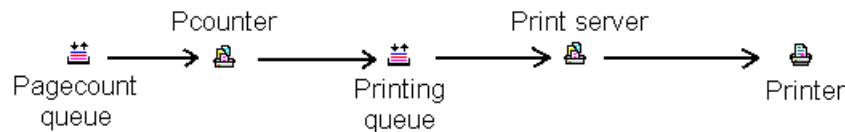
Parallel Ports (LPT1-LPT3)

The Pcounter NLM can print to local LPT ports on the file server. However, parallel port printing on file servers may result in high CPU utilization. Bidirectional page counting methods are available.

Queue→ Port

Another Queue (Queue→) is included as a "port" for backward compatibility with Pcounter 3.x and 4.x. It is meant to be used along with another print server. However, assigning an existing queue to the **Queue monitor mode** list is more efficient and is recommended.

- 1) 2 queues are necessary: 1 for page counting, 1 for printing
- 2) User places job in queue serviced by Pcounter server
- 3) Pcounter counts pages, charges account, places job in the printing (output) queue
- 4) NetWare print server or networked printer prints job remotely



However, after Pcounter moves a job to the output queue, there is no way to know what happens to the print job after that; such as whether it was actually printed or not. For that reason Pcounter will not service a job in this way unless another print server is attached to the output queue, or if for some reason it is unable to place jobs in the output queue.

Pcontrol adds the Pcounter print server to the other queue's Queue Users property. For all jobs to be routed through Pcounter, remove all other users and groups from the output queue's Queue Users property. Otherwise, users can bypass page counting and place jobs directly into the output queue. However, do NOT remove the Pcounter print server as a Queue User of the output queue, or else it will NOT be able to place jobs in it.

All page counting is computed manually when using the Queue→ port.

The output queue may be located on any file server.

Maximum Number of Jobs

Set the Maximum Number of Jobs value according to the speed of the printer. If a printer is offline, jobs (which have already been charged to user accounts) may back up in the output queue. However, if the Maximum Number of Jobs is 1, Pcounter will wait for the output queue to be empty before placing additional jobs there; the maximum throughput that the printer offers may not be achieved, but it allows users the opportunity to delete jobs before they are charged for printing.

Queue configuration settings

Accounting

None	No page counting for this queue
Log file only	Count pages, maintain log file, no user account balances
Account balances and Log File	Count pages, maintain log file & user account balances/quotas using standard NDS Account Balance attribute.
Account balances and Log File (Schema keyword)	Count pages, maintain log file & user account balances/quotas using Pcounter custom schema extension attribute. Using different custom schema extension attributes with different queues, maintain separate balances/quotas for each printer.

Action if below low balance limit

If a print job is submitted by a user whose balance is below his/her low balance limit, Pcounter can:

- Print job anyway
- Delete job
- Pause job

Job notify

There are 3 choices: "Never", "Only If Requested", and "Always". If "Only If Requested" is chosen, then banners are printed only if they are specified in the print job's configuration, or on the CAPTURE or NPRINT command line.

Form feed

There are 3 choices: "Never", "Only If Requested", and "Always". If "Only If Requested" is chosen, then a form feed is issued only if they are specified in the print job's configuration, or on the CAPTURE or NPRINT command line.

Banner print

There are 3 choices: "Never", "Only If Requested", and "Always". If "Only If Requested" is chosen, then banners are printed only if they are specified in the print job's configuration, or on the CAPTURE or NPRINT command line.

How Pcounter handles banners:

If a banner template file is configured, then Pcounter will include a nice-looking banner and turn off the banner flag of the print job. Otherwise Pcounter will turn on the banner flag of the print job, and the print server that services the job will print the banner the way it normally does.

Banner template file

Select from the following banner templates, or custom banners can be defined:

None	No banner printed, or default printer banner
PCL4.BAN	PCL4 - Letter paper size
PCL5.BAN	PCL5 - Letter paper size
PJL.BAN	PCL5 with PJL wrapper - Letter paper size
PJLUSER.BAN	Not actually a banner page, but prints the job owner's username on the printer display for PJL-enabled printers. (Not necessary if using Pcounter printers on AppSocket, Parallel, or Queue-> ports.)
PS.BAN	PostScript - Letter paper size
PS-PJL.BAN	PostScript with PJL wrapper - Letter paper size
PCL4-A4.BAN	PCL4 - A4 paper size
PCL5-A4.BAN	PCL5 - A4 paper size
PJL-A4.BAN	PCL5 with PJL wrapper - A4 paper size
PS-A4.BAN	PostScript - A4 paper size
PS-PJLA4.BAN	PostScript with PJL wrapper - A4 paper size
TEXT.BAN	Plain text

On printers which support PJL and multiple printer languages such as PCL and PostScript, it is recommended that one of the PJL banners be used so that the printer can effectively separate the banner print data from the rest of the print job.

How to design custom banners:

- Use a word processor.
- For Pcounter to insert specific print job information, use the following variables (as they appear with the brackets) in the template:

```
<USERNAME> <MACHINE_NAME> <FULLNAME> <PAGES>  
<COST> <DOCUMENT> <PRINTER> <DATE> <BALANCE>
```

- Generate the banner template by **printing to a file**, using a Postscript or PCL driver.
- Use internal printer fonts, and any fonts used should be printed as characters (not bitmaps).
- Make sure that printer language commands are not inserted between the characters. If this happens, Pcounter won't be able to recognize the information fields above nor place any information on the banner.
- It's a good idea to keep the banner templates as small as possible - obviously larger banner files take longer to print.

Banner template files must be placed in the `\SYS\SYSTEM\PCOUNTER` directory on the file server where the Pcounter NLM is running.

Include banner in pagecount

If a banner template for the printer has been selected, this setting determines whether Pcounter adds the banner page to the total page count.

Duplex Handling

When pages are counted on duplex (2 sided) printers, the page count will turn out to be the number of sides printed instead of the number of pages printed.

- **Ignore:** Pcounter leaves the page count alone.
- **Divide page count in half:** Pcounter will check for duplex print jobs and divide the total page count by 2.

Pcounter only detects duplex printing by looking at the print data. If the printer is setup to print duplex by default, and a print job (such as a plain ASCII text job) contains no information about duplex data, then Pcounter won't detect the duplex printing. The printer should be setup to print single-sided by default - then allow users to specify duplex options using printer drivers.

Hold all jobs

Pcounter can place jobs on hold automatically. Users will have to release each job in order for them to be printed - this can be done from the Pcontrol or from another queue control utility such as PCONSOLE or Windows Print Manager. Pcounter can place jobs on operator hold, user hold, or both.

When using PPOPUP for client print job billing or password protection, Pcounter must always place jobs at least on user hold. PPOPUP looks only for held jobs and releases them once the client code or password is entered.

If the **Non-Secure jobs only** setting is used on NDPS printers, then jobs submitted via non-secure iPrint or LPR will be held. This allows authenticated print jobs (native NDPS, secure iPrint) to print immediately, while non-secure jobs can be authenticated via the job authentication web page using PCOUNTWI.NLM.

Allow unknown users to print

If the server is handling print jobs from other platforms (such as Macintosh or Unix) where users are not required to logon to the server in order to print, it is possible that the print job owner name cannot be found in NDS. Pcounter can automatically map NetWare usernames from the banner field or the print job description. (See Global Settings - Cross platform/LPD options for more details.)

Leave this box unchecked for Pcounter to delete these jobs.

Count jobs in advance for display

When jobs are counted in advance, then page counts and costs can be displayed in the queue job lists of Pcontrol and Pcounter Station. This feature is required if the PPOPUP Information Message type contains substitutions for the page count and cost.

Delete duplicate jobs

Setting this feature will cause all pending jobs from the same user which have the same document name and byte size to be deleted. The job which is currently printing will not be deleted.

Always use manual pagecount

(NDPS only) Some printer gateways report the page count when the job is finished printing. There may be rare instances where the returned page count is incorrect. This feature forces Pcounter to use its own calculated page count for the job and ignores page counts reported by the gateway.

Reject job types

Sometimes users send print jobs to the wrong printer, with unpleasant results - PostScript printers can choke on PCL data, or PCL or dot-matrix printer can print out endless pages of PostScript code. This option can prevent this from happening by not allowing certain types of print jobs to be printed. The choices are **PostScript**, **PCL**, **Text**, and **Unknown** (RAW datatypes), **EMF** and **JNL** (datatypes), or any combination of five.

An **Unknown** print job typically occurs when an inexperienced user sends some sort of binary data file to a printer, or if Pcounter can't recognize a printer language such as Calcomp or Canon Bubblejet. **Unknown** print jobs are counted as 0 pages.

Rejected print jobs will be deleted and a broadcast message will be sent to the user who submitted the job.

Enable popup window

Selecting this option enables PPOPUP to issue a popup window on jobs sent to this queue. This requires at a minimum that jobs be placed on user hold. For extra security, in order to prevent users from releasing the user hold using another utility such as Print Manager/Explorer printer lists, have jobs placed on both User Hold and Operator Hold.

Keep job held after popup

Typically the hold is removed and a job is released after the user processes the popup. However, the job can be kept in a held state if it is necessary for an operator to release the job, or if Pcounter Station is being used.

Skip popup on jobs less than ? pages

This setting will allow jobs to print without pausing the job and requiring the workstation popup, if the number of pages in the job is below the specified number. The minimum allowable value for this setting is 2. This feature requires the Count jobs in advance feature to be used in the Pcounter printer configuration.

Skip popup on jobs less than ? copies

This setting will allow jobs to print without pausing the job and requiring the workstation popup, if the number of copies of the job is below the specified number. The minimum allowable value for this setting is 2. This feature requires the Count jobs in advance feature to be used in the Pcounter printer configuration.

Information message

The PPOPUP window can display a custom message for each printer (instead of a single global message for all printers). This is useful in situations where instructions are necessary for each printer, such as "Pick up printouts at the circulation desk.", or "Each page costs 25 cents."

Prices

Each queue has multiple **per-page** prices which refer to a number of commonly used paper sizes. Each paper size has a check box (to allow the paper size) and a price entry field.

To allow jobs which use a particular paper size, check its corresponding box and optionally enter a price to charge for each page which prints with that paper size. In order to track pages printed without cost totals, prices can be left at zero.

If the price value is negative, then Pcounter will add the number of pages in each print job (multiplied by the per-page price) to the user's account balance, otherwise Pcounter will subtract the number of pages in each print job (multiplied by the per-page price) from the user's account balance.

Any print job using a paper size which is unchecked will be deleted, and a broadcast message will be sent to the user who submitted the job. This prevents users from requesting a paper size not supported or used by a particular printer, such as an A4 job on a Letter sized printer - which would cause the printer to pause.

Plotter area accounting

Setting this feature will override all paper size prices and charge a price based on the area of the image. Plotter area accounting is supported on PostScript, PCL, Epson, and HPGL/2 plotters. A default width can be configured in case the application or driver does not specify a specific image width.

Charge Per Job

Setting the Charge Per Job field will override all paper size prices and charge one price for all jobs which print on the printer. No pages will be counted. This setting is useful for devices such as pen plotters using unsupported pagecount languages such as Calcomp.

Feature price multipliers

Color

This feature allows separate pricing to be established for color and monochrome or grayscale print jobs. When color is detected in the print job, then the cost of the job will be multiplied by the amount specified here. If the price multiplier is less than 1, then the cost of the job will not be affected.

Important note: It is necessary for users to specify whether print jobs should be printed as color or grayscale or monochrome, in the printer driver preferences. Pcounter does not render the print data stream down to the pixel level. Therefore, if color is requested in the printer driver settings for a job which contains only monochrome or grayscale data, Pcounter is likely to detect it as color anyway.

If Pcounter detects color in a print job, all pages in that job are assumed to be color.

Duplex

This feature allows separate pricing to be established for duplex (2-sided) print jobs. When duplex is detected in the print job, then the cost of the job will be multiplied by the amount specified here.

Important note: Duplex job prices are also affected by the Duplex Handling printer/queue configuration setting, which can optionally divide the page count in half.

Default Size/Price

In cases where the paper size cannot be determined, such as plain text print jobs or printer drivers which perform minimal page formatting, this (required) setting will tell Pcounter which paper size price to use.

Rules (Load balancing)

Pcounter's rules allow load balancing of printers.

Rules

- If byte size is greater than a specified amount, then an action can be performed.
- If byte size is less than a specified amount, then an action can be performed.
- If page count is greater than a specified amount, then an action can be performed.
- If page count is less than a specified amount, then an action can be performed.
- If the number of job copies is greater than a specified amount, then an action can be performed.
- If the printer is down, jobs can be moved to a different printer.
- If the print job document name matches a predefined pattern, then an action can be performed.

Actions

- **Delete job**
- **Pause job**
- **Move job to end of queue** - for smaller jobs to print before larger jobs, Pcounter can move the larger jobs to the end. However, jobs will only be moved once to the end of the queue.
- **Move job to another printer**
- **Reschedule job** - jobs can be rescheduled to print at a specified time of day.
- **Do not charge** - no charge will be made to the user's account balance (the job is free) and a cost of zero will be logged regardless of page count.

Order in which rules are processed

- Printer down
- Document name pattern matches
- Byte size rules
- Page count rules
- Job copies rule

When jobs are moved to another printer

- Make sure that the printer drivers are compatible.
- Rules are only processed once on the original printer to which the job was submitted. This prevents jobs from indefinitely moving back and forth between printers.

Broadcast messages

Pcounter can send a broadcast message to print job owners if rules are enforced, so that they are kept informed of the status of their print jobs.

If a rule is enforced, then two message settings are combined into one message - one for the rule itself, and one for the action which was taken. For example, if the action taken on exceeding the byte size limit is to delete the job, the Above byte size message = "Your print document exceeded the maximum byte size limit on %P.", and the Job deleted message = "It was deleted.", then the message

**Your print document exceeded the maximum byte size limit on PrinterName.
It was deleted.**

will be sent to the user.

More rules are planned for a future release.

Accounting

User accounting - Balances and Quotas

It is not necessary to install accounting, as NDS already has built-in account balance properties/attributes for users. However, if accounting is currently used to track connect time or disk usage and the account balances are not in currency units, then user account balances will not appear to be consistent if Pcounter is also used. In this case, use Pcounter Custom Schema Extensions to define new user NDS attributes which do not conflict with NetWare accounting.

The cost for each print job is defined in the printer or queue's configuration. To deduct the cost of each print job from a user's account balance, use positive prices. Use negative prices to keep a running total of print activity in user account balances.

Use PAdmin to modify user/group account balances and low balance limits. PAdmin keeps records in PCOUNTER.LOG.

No record will be kept of any accounting transactions in **SYSCON/NETADMIN/NWADMIN**.

Account balances and Low balance limits

If Accounting=User accounting and log file in the queue configuration, then Pcounter will maintain user account balances using NDS account balance user attributes. For each print job, the account balance is charged (the number of pages printed) * (the Queue paper size price). In order to enforce the queue low balance limit options, a user's account balance must not exceed the low balance limit, or else printing is denied.

If the page price is:	then Pcounter	and Low balance limit must be:
greater than 0	subtracts from balance	less than balance
less than 0	adds to balance	greater than balance

The PCOUNTER.LOG log file

Pcounter keeps a track of all print activity in the log file **PCOUNTER.LOG**. The location of this file is configurable in Global Settings. Users using PAdmin should be granted Read/Write privileges in this directory. It can be located on any volume on any NetWare server, allowing all print data for multiple servers to be kept in one location. When Pcounter accesses a remote server, it will use a licensed connection on that server. If the remote server goes down, Pcounter will keep the log file in the local `\SYS\SYSTEM\PCOUNTER` directory. When the remote server becomes available, Pcounter will automatically reconnect and move any log data stored locally into the remote server's log file.

PCOUNTER.LOG is written in ASCII delimited format. PAdmin generates reports and print histories by reading this file - it can also be imported into a spreadsheet or database program for more detailed analysis.

ASCII delimited field names:

- User name
- Document name (Pcounter) or Accounting Operation (PAdmin)
- Queue name (Pcounter) or User performing transaction (PAdmin)
- Date
- Time
- Workstation where printing or accounting transaction originated (see also PADDRESS.EXE)
- Client code
- Subcode
- Paper size
- Features
- Size in bytes
- Page count
- Cost
- Account Balance

Pcounter Administrator (PAdmin)

Pcounter Administrator is a Win32 utility for managing user account balances, client codes, and generating printing reports. It requires Windows 95, 98, or NT with Novell's Client 32.

- All of the functions are within easy reach. Only a supervisor or a user who has been granted Read/Write Attribute Rights (NDS) may change another user's account information.
- Global preferences are kept in `\SYS\PUBLIC\PCOUNTER.INI` on the default login server, and are configured using Pcontrol.
- Local preferences are kept in the registry. Functions can be assigned to double-clicking on users and groups, setting sorting options, and selecting which fields to view/print in print histories.
- Multiple users can be selected for performing various operations, but groups will be ignored if multiple selections are made. Operations on groups must be done one at a time.
- Account balance displays are updated only when users are selected.
- Launch PAdmin by double clicking on the program icon or by right-clicking on a server or context in Pcontrol and selecting Pcounter, Accounting. Multiple instances of PAdmin can be run for multiple servers/contexts. However, when selecting a context this way, PAdmin will use the last accessed server for determining the log file location. The default file server can be changed in Preferences, Global Settings.
- Right-click on any object for a quick popup menu.

Terminology

Deposit:	Add to an account balance
Charge:	Subtract from an account balance
Low balance limit:	Minimum allowable account balance
Print history:	Summary of printing activity

Creating print histories and reports

Just select the Print History or Reports button - calculate printing totals for various categories. PAdmin can read from the current `PCOUNTER.LOG` file, or any combination of log files. Reports can be saved in HTML, Comma-delimited text (CSV), or space-padded text files. Reports can also be sent by email using a MAPI-enabled program such as Eudora, Netscape Communicator, Outlook, and Outlook Express.

Giving Users Accounting Rights in NDS

In order to allow users to modify other users' account balances, then it is necessary to grant them specific rights in NWAdmin:

- **NetWare 4.x:** assign them Read/Write access to "All Properties" in each context where printer users are located.
- **NetWare 5.x:** assign them Read/Write/Inheritable access to Account Balance, Allow Unlimited Credit, and Low Balance Limit (and/or any Pcounter custom schema extensions) in each context where printer users are located.

A user who has been granted accounting rights will also need to be given read/write permission in the `\SYS\SYSTEM\PCOUNTER` directory so that their transactions can be added to the `PCOUNTER.LOG` file.

Pcounter Pro

PAdmin is able to manage ID and PIN numbers which can be used with supported copier terminals (via alphanumeric entry or card swipe). ID numbers are mapped to user accounts on the network, so that users can identify themselves properly for access purposes.

It is possible to restrict the type of input that can be made to ID numbers.

- Edit `\\SERVER\sys\public\Pcounter.ini`, and create a section **[PAdmin]** if it does not already exist.
- Create a new key, **ProIDRestrictions=X**, where X is one of the following values:
 - 1 Only numeric entries allowed
 - 2 Convert text to upper case
 - 3 Convert text to lower case

Automated setting of account balances

Any accounting transaction (Deposit, Set Balance, Charge) can be automated in PAdmin by selecting a day and time on which the transaction should occur. Automation support in PAdmin requires Windows NT or 2000 - all automated transactions will run on the local computer, and the Task Scheduler service must be running. Be sure that the local computer is running at times when the transactions are scheduled.

ACCOUNT.EXE is used to perform the transactions. PAdmin assumes that ACCOUNT.EXE is located in the same folder as PADMIN.EXE.

The Task Scheduler service uses the local SYSTEM account on Windows NT and 2000. The SYSTEM account has access to local resources, but does not have permission to access any remote network resources. Therefore, ACCOUNT.EXE must login to NetWare using a specified user account. Type **ACCOUNT CONFIG** to setup ACCOUNT.EXE to login as a specific NetWare user when it detects that it is being used by the local SYSTEM account. (ACCOUNT.EXE ignores the Automation settings when run in a standard user session.) Make sure that this NetWare user account has permission to modify account balances and write to the **PCOUNTER.LOG** file. The password is stored unencrypted in the registry key **HKEY_LOCAL_MACHINE\Software\ACCOUNT.EXE**. Use **REGEDT32** to set permissions and prevent unauthorized access to this key.

When an NT/2000 service using the local SYSTEM account logs into NetWare, it has no effect on the desktop user session.

Do not run account balance scheduling on computers which are running NetWare-aware NT/2000 services, as they may be logging into NetWare using different credentials. The local SYSTEM account can only use one authenticated NetWare session at a time.

Troubleshooting

Open the registry key **HKEY_LOCAL_MACHINE\Software\ACCOUNT.EXE** and check the **Status** value for possible error messages.

Scheduling option	Result
Now	No automation - the transaction will occur now.
Every month	The transaction will occur on the specified day of the month at the specified time.
Every day	The transaction will occur every day at the specified time.
Every "day of week"	The transaction will occur on the specified day of the week at the specified time.

For example, to reset the account balance of all users in a group to a certain level on the first day of every month, select the group, right-click, and choose Set Balance. Enter the balance, set Schedule = Every month, Day = 1, Time = 12:00 AM.

A list of scheduled transactions can be seen and managed from PAdmin by pressing the Automation button on the toolbar.

WBALANCE

WBALANCE (32 bit) is a small utility for users to view their account balances quickly.

Global preferences are kept in \SYS\PUBLIC\PCOUNTER.INI on the default login server, and are configured using Pcontrol. Local Preferences are kept in WBALANCE.INI in the WINDOWS directory. To change the settings, choose Preferences on the system menu.

Balance updates are checked periodically.

WBALANCE can display in English, French, French Canadian, German, Spanish, Portuguese, Italian, Finnish, Dutch, Swedish, Czech, Danish, Polish, and Norwegian.

WBALANCE requires Windows 95/98 or Windows NT 4.0 running Novell's Client 32.

It automatically runs minimized in the system tray and can be added to the Startup group or login script.

Just drag the mouse pointer over the \$ icon and the balance will be displayed.

Double-click on the \$ icon to popup a window which displays the balance.

Right click on the \$ icon to view the options menu.

PADDRESS

PADDRESS is a small utility which translates network addresses into Windows NetBIOS computer names for recording in the PCOUNTER.LOG file. Normally Pcounter records the network address from which the print job originated in one of the PCOUNTER.LOG fields.

PADDRESS requires Windows (for Workgroups) 3.11, 95, 98, or NT. It scans all of a workstation's connected servers and writes an entry into \SYS\PUBLIC\PADDRESS.INI on each connected server. This entry maps the computer's network address to the Windows computer name - if Pcounter finds the entry, it makes the log file more readable and informative.

Users must be granted write permission to \SYS\PUBLIC\PADDRESS.INI.

If PADDRESS is not used, the workstation field will appear as **NetworkNumber/NetworkAddress**.

If PADDRESS is used, the workstation field will appear as **\\ComputerName**.

Add PADDRESS.EXE to the Startup program group, or to a login script:

```
#COMMAND /C SYS:PUBLIC\PADDRESS.EXE
```

ACCOUNT.EXE

ACCOUNT.EXE is a Win32 command line program for managing user account balances. It requires Windows 95/98 or Windows NT 4.0 running Novell's Client 32.

Type in commands or use it for batch processing of many accounts at once. Type ACCOUNT to see a list of options.

ACCOUNT.EXE can be used in bindery or NDS mode. In bindery mode a username can be specified as ServerName/UserName when accessing a server other than the default server. In NDS mode, it can search the tree for a full username if the username is not found in the default context.

Pcounter Web Interface (PCOUNTWI.NLM)

Pcounter includes PCOUNTWI.NLM, which allows managers to modify account balances, for users to check their account balances, and for users to authenticate print jobs, using a web browser. PCOUNTWI can run in 2 possible modes:

- **(Recommended)** If PCOUNTWI.NLM is running on NetWare 5.1 or later, it can run within the NetWare Management Portal. Pcounter links will be shown on the portal main menu, but the page is also accessible directly without navigating through the portal menu. The portal uses port 8008 by default, or 8009 for SSL.
- Use the built in PCOUNTWI.NLM HTTP server. If another web server is running on this computer, select a port number other than 80 which will not conflict with other TCP/IP services. For example high port numbers such as 8080 are not likely to cause a conflict. The account balance manager and print job authentication pages are not supported in this configuration.

Contextless login on Management Portal

Contextless login is now supported with NetWare 6.5 Support Pack 1. For more information:

<http://www.novell.com/documentation/nw65/remotemgr/data/anj5v6z.html>

See the **Change Default eDirectory Login Contexts option**.

The Account Balance Manager page

- This page is only supported within the NetWare Management Portal. While any logged in user can access the page, only users with permission to modify the NDS account balance attributes will be able to manage account balances.
- PCOUNTWI.NLM is not able to record transactions in log files on remote servers. Therefore it should run on the server where the log location is hosted.

Customizing the Account Balance web page

- The Account Balance web page is found in **\sys\system\pcounter\balance.htm**. This file can be modified for general purposes. Use the following strings for value substitutions on the web page:

%U - User name

%B - Account balance

- Use the following convention to display custom schema extension account balance values:

<http://yourservername:8008/Balance?SchemaKeyword>

The Authenticate Jobs page

- This page is only supported within the NetWare Management Portal. It is useful as a web-based substitute for using PPOPUP in ID/Password or Confirmation mode. NDPS via IP, iPrint, IPP, and LPR printing to NDPS are supported. NDPS via IPX and Queue-based printing are not supported.
- NDPS printers should be setup to include Enable Popup Window, and optionally Count Jobs in Advance for Display, so that page counts and cost can be shown in the browser.
- All client platforms are supported, including Windows, Macintosh, and Linux.
- A customized text message at the top of the web page can be configured. Use %U and %B to substitute the user name and account balance. HTML tags such as
 can be used to insert new lines and other formatting.

Example HTML - accessing the Pcounter portal administrator page using SSL:

```
<a href="http://nwServer:8009/PcounterAdmin">Manage account balances</a><br>
```

Example HTML - accessing the Pcounter portal balance page using port 8008:

```
<a href="http://nwServer:8008/Balance">Check your print balance</a><br>
```

Example HTML - accessing the Pcounter authenticate jobs page using SSL:

```
<a href="http://nwServer:8009/AuthJobs">Authenticate print jobs</a><br>
```

Example HTML - accessing the Pcounter web server using the default port 80 in a small popup window:

```
<a href="javascript:window.open  
( 'http://nwServer/balance', '', 'width=400,height=165,toolbar=no,resizable' );  
void( '' );"  
onMouseOver="(window.status='Check your print balance'); return true"  
onMouseOut="(window.status=''); return true">  
Check your print balance</a><br>
```

Pcounter Popup

Popup Overview

Any Win32 (95, 98, ME, NT, 2000) station on the network can be setup to have a window pop up after each print job, allowing users to enter additional information for the logging of the job. All that is necessary is to run PPOPUP.EXE on each station where this feature is required.

PPOPUP is activated for each printer by checking the **Enable popup window** box in the Pcounter queue configuration.

When a print job is submitted, Pcounter puts a hold on the job until the user enters the information, and then releases it.

For PPOPUP to automatically run when a user logs on, create a shortcut to PPOPUP.EXE in Start Menu, Programs, Startup, or add PPOPUP.EXE to a login script. If PPOPUP is launched from a login script, use the following syntax:

```
START DRIVE:PATH\PPOPUP [/options]
```

PPOPUP can display in English, French, French Canadian, German, Spanish, Portuguese, Italian, Finnish, Dutch, Swedish, Czech, Danish, Polish, and Norwegian.

Requirements

The Novell Client is required on the workstation. The popup window settings are read from `\SYS\PUBLIC\PCOUNTER.INI` on the default server, so users need read permission to this file.

Command line options:

/hideicon - PPOPUP runs hidden, without an icon.

/noexit - PPOPUP runs with the Exit option disabled on its popup menu.

/preload=serverName - PPOPUP reads its configuration from serverName, and loads the client code database if necessary. Normally these operations are not performed until the first print job, and there may be somewhat of a delay (after the first print job) due to the time it takes to read the client database. This option can save time by preloading large databases so that the popup response is fast for the first print job.

/pmj - The local setting **Process multiple jobs** is enabled.

/poll=X - The local **Poll servers** setting is set to X seconds.

/server=serverName - PPOPUP adds serverName to its list of servers. This is useful in rare cases where PPOPUP is unable to automatically detect a server.

/delay=X - PPOPUP will delay loading for X seconds. This is useful if the system is not initialized when PPOPUP runs.

/skw=keyword - PPOPUP will read account balances from the custom schema extension attribute defined by keyword.

/term - Terminate PPOPUP.

PPOPUP Local Settings

When the PPOPUP Preferences menu is selected, the user will see a list of file servers to which printer connections have been made. PPOPUP will poll each of these servers for popup jobs once per specified interval (in seconds). Each poll consists of only 1 NCP packet. However, any servers which are not running Pcounter or are hosting queues where popups are not required can be deselected, in order to save network bandwidth.

Process multiple jobs - checking this option on the PPOPUP menu will allow multiple print jobs from the same workstation to be recorded with the same data (from a single PPOPUP response). This is useful for applications which generate many print jobs at once, such as image catalogs and mail merges.

Window type: Client code list

Users can choose from a pre-configured one-dimensional list of client codes. Each client code may also have a description which is also displayed. Client codes can be used to represent clients, projects, and departments. The client code information is kept in **PPOPUP.DBF** and is managed using Pcounter Administrator. Users should have Read permission to this path. When the window pops up, all users need to do is double-click on the client code. Users can search the client code descriptions in order to find a match.

The length of **client codes** should be limited to 20 characters.

Information message type

Pcounter can include an optional information message in the popup window.

- All printers:** PPOPUP displays a single global message for all printers. Set this message in the server Popup configuration.
- Individual printers:** PPOPUP displays a different message for each printer. Set these messages in the printer's configuration.

Messages can include substitutions for the user name (%U), document name (%D), number of pages (%P), cost (%C), and account balance (%B). The cost and account balance substitutions require the **Count jobs in advance** feature to be used in the Pcounter queue configuration.

Client code only from list

If this box is checked, then users must select a client code from the list, otherwise they can either select a code from the list or type in a code manually.

Associate client codes with network user and group names

This feature allows different client code lists to be displayed for separate groups and/or users. Users will only see client codes which are associated with network groups to which they belong, or associated with their logon name.

- A separate database file is maintained for this purpose, called **PASSOC.DBF**.
- In PAdmin, select the **Client code associations** tab at the bottom.
- A list of users and groups are shown on the left, and the associated client codes are on the right.
- Right-click on any object in this view for a popup menu.
- It is possible to associate multiple client codes to multiple users/groups in one operation, or cut, copy, and paste associations from one user/group to another.
- Client codes can also be copied from the Client codes view in PAdmin, and pasted into an association list.

Remember previous selections

PPOPUP can remember previous selections for user convenience. However, if it is required that users enter a new client code for each print job, then PPOPUP will clear the entry field each time.

Allow non-chargeable jobs

If some jobs require logging of client codes but not charging, users can be allowed to specify that individual jobs will not be charged. If a job is marked as non-billable, the cost field of **PCOUNTER.LOG** will be set to zero for the job, but the features field will contain an entry **/NB=x** where x=the real cost of the job.

Allow subcode form

When this feature is enabled then the subcode field is available for users to type in any notes they please.

Allow auto-respond

This feature allows users to have PPOPUP set client codes on print jobs automatically, based on the most recent input made in the PPOPUP window, for a specified period of time. If a user wishes to cancel auto-respond after it has been set, then it can be disabled in PPOPUP Preferences.

Window type: Entry form

PPOPUP displays a generic form where users type in a client code.

Information message type

Pcounter can include an optional information message in the popup window.

- All printers:** PPOPUP displays a single global message for all printers. Set this message in the server Popup configuration.
- Individual printers:** PPOPUP displays a different message for each printer. Set these messages in the printer's configuration.

Messages can include substitutions for the user name (%U), document name (%D), number of pages (%P), cost (%C), and account balance (%B). The cost and account balance substitutions require the **Count jobs in advance** feature to be used in the Pcounter queue configuration.

Verify entry in client code database

- No: users can type in anything they want.
- Normal: force users to validate a client code from **PPOPUP.DBF**
- Display as password: same as Normal, except hidden like a password.

Remember previous selections

PPOPUP can remember previous selections for user convenience. However, if it is required that users enter a new client code for each print job, then PPOPUP will clear the entry field each time.

Allow non-chargeable jobs

If some jobs require logging of client codes but not charging, users can be allowed to specify that individual jobs will not be charged. If a job is marked as non-billable, the cost field of **PCOUNTER.LOG** will be set to zero for the job, but the features field will contain an entry **/NB=x** where x=the real cost of the job.

Allow subcode form

When this feature is enabled then the subcode field is available for users to type in any notes they please.

Window type: ID and password

This is useful for **printing security**. Users need to enter a user ID and password. If they fail, then the print job is deleted, otherwise the job prints.

If users are using shared logon accounts, such as GUEST or STUDENT, or if each workstation has its own logon which is being shared by users, such as STATION1 and STATION2, then PPOPUP can force users to enter their own private userids and passwords in order to identify print jobs.

Information message type

Pcounter can include an optional information message in the popup window.

All printers: PPOPUP displays a single global message for all printers. Set this message in the server Popup configuration.

Individual printers: PPOPUP displays a different message for each printer. Set these messages in the printer's configuration.

Messages can include substitutions for the user name (%U), document name (%D), number of pages (%P), cost (%C), and account balance (%B). The cost and account balance substitutions require the **Count jobs in advance** feature to be used in the Pcounter queue configuration.

Password authentication

- **Network passwords** - Network passwords will be checked. Jobs are deleted after 3 incorrect attempts.
- **Job ID - No job password** - Changes the print job owner name for visual identification only. This is intended for use with Pcounter Station or for situations where users are sharing login accounts and additional information for identifying print jobs is required.
- **Job ID - Job password optional**
- **Job ID - Job password required** - If used with Pcounter Station, then this password will be required in order to release the job for printing.

Local login username only

If this box is checked, then only the password of the user who is logged on to the workstation will be accepted.

Custom Database/Authentication DLL

It is possible to write a DLL which can access proprietary databases or be used for alternative types of authentication. Please contact A.N.D. Technologies for details.

Window type: Matter number list

This is similar to the client code list - except that the database is 2-dimensional. Each client code can have an associated list of subcodes (matter numbers). When users select a client code, the relevant subcodes are displayed.

Users can choose from a pre-configured list of client codes and subcodes. Each client code and subcode may also have a description which is also displayed. Client codes can be used to represent clients, projects, and departments. The client code information is kept in **PPOPUP.DBF** and is managed using Pcounter Administrator. Users should have Read permission to this path. Users can search the client code descriptions in order to find a match.

The length of **client codes** and **subcodes** should be limited to 20 characters.

Client code only from list

If this box is checked, then users must select a client code from the list, otherwise they can either select a code from the list or type in a code manually.

Subcode only from list

If this box is checked, then users must select a subcode from the list, otherwise they can either select a code from the list or type in a code manually.

Associate client codes with network user and group names

This feature allows different client code lists to be displayed for separate groups and/or users. Users will only see client codes which are associated with network groups to which they belong, or associated with their logon name.

- A separate database file is maintained for this purpose, called **PASSOC.DBF**.
- In PAdmin, select the **Client code associations** tab at the bottom.
- A list of users and groups are shown on the left, and the associated client codes are on the right.
- Right-click on any object in this view for a popup menu.
- It is possible to associate multiple client codes to multiple users/groups in one operation, or cut, copy, and paste associations from one user/group to another.
- Client codes can also be copied from the Client codes view in PAdmin, and pasted into an association list.

Remember previous selections

PPOPUP can remember previous selections for user convenience. However, if it is required that users enter a new client code for each print job, then PPOPUP will clear the entry field each time.

Allow non-chargeable jobs

If some jobs require logging of client codes but not charging, users can be allowed to specify that individual jobs will not be charged. If a job is marked as non-billable, the cost field of **PCOUNTER.LOG** will be set to zero for the job, but the features field will contain an entry **/NB=x** where x=the real cost of the job.

Allow auto-respond

This feature allows users to have PPOPUP set client codes on print jobs automatically, based on the most recent input made in the PPOPUP window, for a specified period of time. If a user wishes to cancel auto-respond after it has been set, then it can be disabled in PPOPUP Preferences.

Window type: Confirmation

The Confirmation window type does not require any input from the user, other than whether they want the job to print. This is useful in situations where users may need to be reminded of their balance and/or the cost of the job before they allow the job to print.

Information message type

Pcounter can include an optional information message in the popup window.

All printers: PPOPUP displays a single global message for all printers. Set this message in the server Popup configuration.

Individual printers: PPOPUP displays a different message for each printer. Set these messages in the printer's configuration.

Messages can include substitutions for the user name (%U), document name (%D), number of pages (%P), cost (%C), and account balance (%B). The cost and account balance substitutions require the **Count jobs in advance** feature to be used in the Pcounter queue configuration.

Popup - Users exempt from popup

When a queue is configured to support popups, all jobs will be automatically placed on hold. There may be reasons for print jobs from certain users to **not be paused**, such as incoming print jobs from a fax server. If the fax server software is logging into the network using a specified user account, then add it to this list. Pcounter will **not pause** the job, so that it can print right away without user intervention. Pcounter will still track the print job, but the client code and subcode fields will be empty in the `PCOUNTER.LOG` file.

Associating client codes with users/groups

This feature allows different client code lists to be displayed for separate groups and/or users. Users will only see client codes which are associated with network groups to which they belong, or associated with their logon name.

- A separate database file is maintained for this purpose, called `PASSOC.DBF`.
- In PAdmin, select the **Client code associations** tab at the bottom.
- A list of users and groups are shown on the left, and the associated client codes are on the right.
- Right-click on any object in this view for a popup menu.
- It is possible to associate multiple client codes to multiple users/groups in one operation, or cut, copy, and paste associations from one user/group to another.
- Client codes can also be copied from the Client codes view in PAdmin, and pasted into an association list.

Maintaining PPOPUP.DBF

- Use **PAdmin** to add and remove entries from `PPOPUP.DBF`.
- To see the list of client codes, press the pyramid button on the toolbar.
- Press the **Ins** key to add new entries and the **Del** key to delete entries.
- When client codes are deleted, then all associated subcodes will also be deleted.
- Select **Print History** to view a list of all print jobs for a particular client code.
- Select **Reports** to calculate totals for all client codes.

Database functions

- **Remove deleted records** - when client codes are deleted, the space is not reclaimed from the file. This operation compresses the file to eliminate space from deleted records and speeds up file load times, and also reindexes the file.
- **Reindex** - Refreshes the index for the database file. Reindexing is recommended after importing many new entries.
- **Importing data** - If client code lists are already in files, they can easily be imported into `PPOPUP.DBF`. When importing, if a record already exists, it will not be modified or overwritten.

Importing comma delimited text files

Each record occupies a line in the file. The format of each line should be:

ClientCode,Subcode,Description

- The description field is optional and can be left blank.
- If a subcode record is imported without also having imported its associated client code record, then records will appear to import correctly, but none of the subcode records will be seen.
- Do not import a subcode record unless its associated client code record exists.
- Reindexing is recommended after importing many records.

Example 1 : Importing only client codes without descriptions

(Imports 3 client code records.)

```
Client1  
Client2  
Client3
```

Example 2: Importing client codes, subcodes, and descriptions

(Imports 2 client codes with 3 associated subcodes each.)
(Note that the client code record should be imported first.)

```
RAZZL,,Razzle Gadgets  
RAZZL,ENG,Engineering  
RAZZL,MKT,Marketing  
RAZZL,ACC,Accounting  
CTHOS,,City Hospital  
CTHOS,RAD,Radiology  
CTHOS,PHA,Pharmacy  
CTHOS,CAF,Cafeteria
```

Importing an Equitrac Client number EQT file

If Equitrac is being used for cost control on copiers, the same data from the copier terminal can be used. An EQT file is similar in format to a Windows INI file:

```
ClientCode1=Description1  
RAZZL=Razzle Gadgets  
CTHOS=City Hospital
```

When Client number EQT file is imported, only client code records will be created in **PPOPOP.DBF**.

Importing an Equitrac Matter number EQT file

Make sure that the client code records have been imported first before performing this operation. The Matter number EQT file is similar to the Client number EQT file, except that client and matter numbers are both included.

```
ClientCode1MatterNumber1=Description1  
  
RAZZLENG=Engineering  
RAZZLMKT=Marketing  
RAZZLACC=Accounting  
CTHOSRAD=Radiology  
CTHOSPHA=Pharmacy  
CTHOSCAF=Cafeteria
```

It is necessary to tell PAdmin how many characters are in the client code before importing so that it can separate the client code from the subcode (matter number) in the EQT file and find the matching client code record in **PPOPOP.DBF**. In the above example, PAdmin would need to match a client code length of 5 characters.

When a Matter number EQT file is imported, only subcode records will be created in **PPOPOP.DBF**.

Using Auto Client Codes

Auto client codes can be assigned to users in Pcounter Administrator and automatically recorded in the PCOUNTER.LOG file. This is a useful alternative to having a popup window prompt users to enter a client code for each print job. For example, it is possible to assign departments, groups, or project numbers to each user's print jobs and have them appear in reports without any user intervention.

Note: if a client code is selected using PPOPUP for a print job, it will override the user's Auto client code setting for that job.

The Pcounter Auto client code schema extension is required. Only Admin-equivalent users in the tree can modify the NDS schema. To install the Pcounter Auto client code schema extension on the tree:

- Run Pcontrol, Network View
- Select the tree, right-click and choose Pcounter, Schema Extensions
- Choose the Custom Schema Extensions tab

It is necessary to grant attribute rights in NDS to the NDPS Manager or the Pcounter Print Server to be able to read Auto client codes in each top-level container where Pcounter printer users are located.

- PCOUNTER:Autocode - Read/Inheritable

Pcounter Plot Manager

The Pcounter Plot Manager is a tool for batch submission of plot files which integrates support for client codes and job scheduling. Plot files are assumed to be printer ready (in HPGL/2 or PostScript format, for instance) and are sent directly to print queues without any driver processing.

- Plot files can be added to the list via the menu, toolbar, drag/drop, or copy/paste from Windows Explorer.
- Multiple plot files can also be added by selecting the **Batch, Add files from** menu. Here, a plot file list can be read from a text file. The text file should contain one plot file on each line - for example:

```
c:\plotfiles\project101a.plt  
c:\plotfiles\project157c.plt  
c:\plotfiles\project222d.plt
```

- If client codes are specified, then PPOPUP is not required and jobs will not be paused.
- Jobs can be scheduled for any date and time.
- Multiple copies can be specified in the Print dialog window, which will result in multiple print jobs.
- The order in which files are printed can be sorted by pressing the file column header button, and files can be dragged to new positions.