

Pcounter for Windows

Printer Accounting for Windows

Version 2.12

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Contents

Introduction	4
Welcome to Pcounter for Windows.....	4
Upgrading from Pcounter 1.x.....	5
Pcounter program components and utilities.....	6
Requirements for running Pcounter services and port monitors.....	7
Installation file locations.....	7
Use Pcontrol for configuration.....	7
60 day trial period.....	7
Important Concepts	8
Windows 2000/2003 and Active Directory.....	8
Pcounter and Windows Server 2003.....	8
Windows XP as a Pcounter print server.....	8
Types of accounting.....	9
Allowing access to the Windows Registry over the network.....	9
Cluster support.....	9
Print Spooling must be done to the server - not peer to peer.....	10
Tracking jobs by authenticated users.....	10
Jobs from Macintosh and LPR clients.....	11
Networks with multiple/trusted domains.....	11
Error Logging.....	11
Year 2000 Compliance.....	11
Services and Port Monitors	12
Overview.....	12
The Pcounter Printer Control service.....	12
Datatypes and Spooling.....	12
The Pcounter Data Server service.....	13
Pcounter port monitors	14
The Pcounter AppSocket Port.....	15
The Pcounter LPR Port.....	16
The Pcounter Parallel Port.....	16
The Pcounter OtherPrinter Port.....	17
Quick start summary	18
Tracking printers attached to Windows 9x workstations	19
Global Settings	20
Delete Paused Jobs After ? Minutes.....	20
Numerical Format.....	20
Get User Information from.....	20
Log rejected jobs.....	20
Messaging.....	21
Data Server.....	22
Default Printer Configuration.....	22
LPD Server	23
Getting jobs from NetWare queues	24
Accounting	25
User account balances.....	25
The PCOUNTER.LOG log file.....	26
Pcounter Administrator (PAdmin).....	27
Automated setting of account balances.....	28
ACCOUNT.EXE.....	28
Using ACCOUNT.EXE as a web CGI application.....	29
WBALANCE.....	30
BALANCE.EXE - Web CGI application for users to check their account balance.....	31
Printer Configuration Settings	32
Accounting.....	32
Action if below low balance limit.....	32
Banner (separator) template.....	32
Include banner in pagecount.....	33
Duplex Handling.....	33
Pause all jobs.....	33
Count jobs in advance for display.....	33

Delete duplicate jobs	34
Disable print notification	34
Reject job types.....	34
Allow unknown users to print.....	34
Enable popup window	34
Keep job paused after popup	35
Skip popup on jobs less than ? pages	35
Skip popup on jobs less than ? copies.....	35
Information message	35
Prices	36
Rules	37
Load balancing jobs across multiple printers	38
Using the Popup - Print job client billing and Password Security.....	40
Popup Overview	40
Window type: Client code list	42
Window type: Entry form	43
Window type: ID and password (Shared logon accounting)	44
Window type: Matter number list.....	46
Window type: Confirmation	47
Users exempt from popup.....	47
Maintaining database files.....	47
Importing comma delimited text files.....	48
Importing an Equitrac Client number EQT file	49
Importing an Equitrac Matter number EQT file	49
Using Auto Client Codes.....	50
Pcounter Plot Manager.....	51
Pcounter Web Client.....	52

Introduction

Welcome to Pcounter for Windows

Pcounter is software which tracks usage of printers hosted on Windows NT, 2000, XP, and 2003 computers. 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.
- Keeps a log file of all print jobs, from print queues located on any Windows computer, allowing the integration of print activity from all servers on the network. Pcounter also supports tracking of jobs sent to parallel printers which are connected to Windows 9x workstations.
- Maintains user account balances using database files, enabling a single location to be kept for users in each domain.
- Works with multiple/trusted domains.
- Configurable popup windows which appear after print jobs at workstations, allowing users to enter client codes and job numbers, usernames and passwords for shared logon printer accounting, network passwords for printing security, or network group names.
- Generate statistical reports on printing activity - by user, group, printer, 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.
- 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 (Separator) pages containing all information about the print job, including the page count and account balance. Banner/separator pages can be custom designed.
- Automatically pause all jobs if desired.
- Reject incorrect print job types such as Postscript on PCL printers.

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Upgrading from Pcounter 1.x

- Run the **DBUpdate** utility on the Pcounter 1.x accounting server. This will convert Pcounter 1.x registry and database accounting formats to the new DBF format. Accounting files will be placed in the **ServerName**\Pcounter\Data directory. The Pcounter Data Server service should now be run on this server.
- **DBUpdate** will also convert the **PMAX.INI** client code popup information file to the new DBF format and place the file in the **ServerName**\Pcounter shared directory.
- Once it is certain that the data is safe, the Pcounter 1.x PDB files that were previously used can be deleted if Database files were used for accounting - if Registry accounting was used, the **HKEY_LOCAL_MACHINE\Software\Pcounter\Balances** registry key can be deleted.
- If a different data server will be used to run the Pcounter Data Server service, move all of the accounting database files to **DataServer**\Pcounter\Data, and client code database files to **DataServer**\Pcounter.
- If Pcounter 1.x is currently being run, **uninstall the Pcounter service** using Psetup 1.x.
- It is necessary to use Pcounter port monitors for accounting. Configure existing Pcounter printers to use Pcounter port monitors.
- The PcounterService account used for accessing remote servers in Pcounter 1.x is no longer needed nor required and can be deleted.
- Print job datatypes no longer need to be RAW, although if the Pcounter LPR Port monitor will be used, it is a good idea to force RAW printing. See the Pcounter LPR Port section for more details.
- Printer configurations and prices will migrate directly from Pcounter 1.x to 2.x, so no reconfiguration is necessary. However, the Banner Position option has been removed, as all banners are printed before the job in Pcounter 2.x.

Pcounter program components and utilities

Pcounter Printer Control Service

A service running on the Windows print server, which monitors print jobs.

Pcounter Port Monitors

DLLs which work with the Windows spooler and Pcounter Printer Control Service to keep track of printing.

Pcounter Data Server Service

This Windows service can run on any NT 4.0 or later machine - it manages all of the database and log file data collected from Pcounter-controlled printers.

PCONTROL.EXE

Printer/queue management and Pcounter configuration utility.

Pcounter Administrator: PADMIN.EXE

A management utility for user account balances, client code lists, shared logon accounts, user print histories, and a statistical printing report generator.

ACCOUNT.EXE

A command-line account balance management utility, which can also be used as a web CGI account balance manager.

WBALANCE.EXE

Utilities for users to check their own account balances.

BALANCE.EXE

A web CGI utility for users to check their own account balances.

PPOPUP.EXE

A utility which pops up a window after each print job, allowing users to enter additional information for the logging of the job, such as client matter numbers, job codes, or shared logon accounting.

PLOTMGR.EXE

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

Requirements for running Pcounter services and port monitors

Windows NT 4.0 Workstation or Server (Intel) (Service Pack 6 recommended).
or
Windows 2000 Professional or Server (Intel).
or
Windows XP Professional (Intel).
or
Windows 2003 Server (Intel).

Installation file locations

If Pcounter is being used for both NetWare and Windows, both versions can be installed into the same directory. PCONTROL.EXE 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 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 Windows versions.

`d:\Pcounter\NT`

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

Pcounter for Windows accounting management and client tools.

`d:\Pcounter\NT\Server`

`*.EXE, *.DLL`

Services and Port Monitors.

Use Pcontrol for configuration

Pcounter is designed so that all of its printing parameters can be configured from any Windows NT or later computer on the network. Use Pcontrol to set Pcounter configurations on printers and print servers, in addition to managing print jobs. However, it is necessary to run the Pcounter port wizard in Pcontrol in order to install and configure ports on remote computers.

60 day trial period

Pcounter comes with an amazing 60 day trial period. All features are enabled during the trial period; however, Pcounter will stop working entirely if the trial period has expired. The trial period is activated when one of the services is started. The trial period status can be viewed in Pcontrol by selecting a server and choosing **Pcounter configuration, Global Settings, Registration and trial period**.

Important Concepts

Windows 2000/2003 and Active Directory

- All mention of Windows NT by Pcounter and in this document can also be applied to Windows 2000, XP, and 2003.
- Pcounter works on Windows 2000/2003 and Active Directory networks, in both native and mixed modes.
- Internally, Pcounter records user names using NT4 syntax, as DOMAIN/Username. However, Pcounter Administrator is able to navigate Active Directory trees and view users in organizational units, in addition to viewing NT4-compatible domains.

Pcounter and Windows Server 2003

It is necessary to make a registry change and restart the Spooler service in order for Pcounter to work properly on Windows Server 2003.

Key: HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\Print
New DWORD DisableServerFilePooling (Should be set to 1)
value:

Pcontrol will automatically offer to set this value and restart the spooler.

For more information please see Microsoft Knowledge Base Article 815913.
<http://support.microsoft.com/?kbid=815913>

How to determine whether file pooling is on:

- Find the spool folder. Open the Printers folder, choose File, Server Properties, Advanced tab.
- Look at the .SPL files in the spool directory.
- If they are called FPxxxx.SPL then file pooling is on.
- If they are called xxxxx.SPL (x=digits) then file pooling is off.

Windows XP as a Pcounter print server

It is necessary to make a registry change for each Pcounter printer (ie. printers which are using Pcounter ports) and restart the Spooler service in order for Pcounter to work properly on Windows XP. This is not necessary for Windows XP clients which are printing to shares on other computers.

Key: HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion
\Print\Printers\Modify string value: SpoolDirectory

Pcontrol will automatically offer to set these values to the default spool directory and restart the spooler.

This method can also be used on Windows Server 2003 on a per-printer basis.

For more information please see Microsoft Knowledge Base Article 815913.
<http://support.microsoft.com/?kbid=815913>

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.

Allowing access to the Windows Registry over the network

Pcounter keeps its printer configuration information in the registry of each Windows print server. If Pcounter printers are being configured remotely from another computer on the network, it is necessary to have access to the Windows print server's registry.

On a Windows NT 4.0 or later system, by default only members of the Administrators group can access the registry over the Network.

Using the REGEDT32 utility, **permissions can be set** for the entire registry or individual keys so as not to compromise the security of the server.

For technical information on how to allow access to the Windows registry over the network, please read the Microsoft Knowledge Base Article (Q153183)

- <http://support.microsoft.com/?kbid=153183>

Cluster support

- The **Pcounter print server components** (Pcounter Printer Control service and Ports) are not supported on Windows clusters at this time.
- The **Pcounter Data Server** service is supported on Windows clusters. When attempting to configure a Pcounter server, Pcontrol will detect cluster nodes and offer the ability to install the service on each node. However, Cluster Administrator should be used in advance to create the PCOUNTER share.

Print Spooling must be done to the server - not peer to peer

All jobs submitted to printers which are monitored by the Pcounter Printer Control service and port monitors must only be spooled to the Windows print server.

Users cannot be allowed to print directly from workstations to network printer addresses, or Pcounter will not see those print jobs (unless of course Pcounter services and monitors are installed on each workstation). Printers which are accessed in peer-to-peer modes by workstations using protocols such as Appletalk, LPR, and DLC should be setup like this:

- Configure the printer for the peer-to-peer mode on the server
- Setup sharing on the printer so users can spool jobs to the server's queue
- Reconfigure workstations to use the server's shared printers instead of peer-to-peer modes.

Tracking jobs by authenticated users

If it is required to keep track of print jobs from users who are logged on/authenticated to Windows servers, it is not necessary to import or create Pcounter database entries for these users. Pcounter automatically looks up usernames on a PDC or other server which contains user accounts.

If Pcounter is enforcing user account balances/quotas, then users who have had no printer activity are assumed to have an account balance and low balance limit of zero. However, default balances and low balance limits (for new users and users who have had no print activity) can be automatically set in PAdmin. Just select **Preferences, Automatically initialize balances to default values on startup/refresh**. The next time PAdmin is started, select another domain, or manually refresh, the default values will be set.

For tracking printing from users sharing logons, see the section **Popup - Enabling printer accounting while using shared logon names**.

Jobs from Macintosh and LPR clients

Mac usernames

When Macintosh users submit print jobs to Windows print queues via Services for Macintosh, the username typically shows up in parentheses, such as **(username)**. Pcounter automatically strips off the parentheses and processes the print job based upon the username inside them. This name is usually the desktop owner name from Control Panel.

Mac authentication

Windows Services for Macintosh do not require Macintosh users to logon to Windows in order to print, so it is possible for Mac users to impersonate other users.

LPR usernames

When LPR clients submit print jobs to Windows print queues using the Microsoft LPD service, the username typically shows up as a username followed by the client IP address in parentheses, such as **username (192.168.1.27)**. Pcounter automatically strips off the IP address portion and processes the print job based upon the username.

LPR authentication

There is no protocol for user authentication using LPR/LPD, so it is possible for LPR users to impersonate other users.

- Unknown users can be prevented from printing in each printing configuration.

Pcounter Web Client

Jobs from LPR clients can be authenticated using the Pcounter Web Client. Macintosh computers can also be configured to print via LPR. The Pcounter Web Client can also be used by LPR clients to apply print job billing codes as well as for authentication.

Networks with multiple/trusted domains

When a print job is processed by Pcounter, it verifies the existence of the print job owner by looking up the name on the server designated in Global Settings - Get User Information From (typically the Primary Domain Controller). If the user is not found in the current domain, trusted domains will be searched next.

The print job owner's home domain is listed along with the username (DomainName\UserName) in the first field of the log file.

Unknown users can be prevented from printing in each printing configuration.

Error Logging

Any operating errors, such as configuration problems, jobs which cannot be counted, etc. will be recorded in the system event log and can be viewed using the **Event Viewer** utility (in the Administrative Tools program group). Select **Log, Application**, to see any messages issued by Pcounter.

Year 2000 Compliance

Pcounter is entirely Year 2000 compliant. All dates have 4 digit year quantities.

Services and Port Monitors

Overview

There are 3 major components of the Pcounter accounting system: the Pcounter Printer Control service, Pcounter port monitors, and the Pcounter Data Server service.

The Pcounter Printer Control service and Pcounter port monitors work together to manage printers and must be used at the same time on Windows print server. The Pcounter Data Server service manages all Pcounter printer accounting data and can run on any Windows NT or later computer.

These components allow Pcounter the flexibility to easily scale to the size of the network. For instance, if all printers are located on one Windows print server, the data can be kept on the same computer by running both services and installing the port monitors. Likewise, in a distributed printing environment, the Printer Control service can be used with port monitors on many Windows print servers, while running the Data Server service on another Windows NT or later computer, or even one of the Windows print servers.

It is necessary to install (or uninstall) the services and port monitors by running **Pcontrol**. Select the Windows computer and press the **P** button or choose the **Server, Pcounter, Pcounter configuration** menu. Next, select the **Services/Ports** tab. Running Setup to install the software on the desktop does not automatically install the services and port monitors. Likewise, uninstalling the software from the desktop does not automatically uninstall the services and port monitors.

The Pcounter Printer Control service

It is necessary for the Pcounter Printer Control service to run on Windows print servers where Pcounter port monitors are installed. Upon installation, the Pcounter Printer Control service will be configured with Startup Type: Automatic, which means that it will run at system boot time. However, it is possible to start and stop the service any time using Pcontrol from any Windows NT or later computer on the network, if network permissions have been granted to do so.

If a printer's popup or pause all jobs setting is changed, then the service should be restarted. All other settings are dynamic (including adding new monitored printers), and the service need not be restarted.

The SYSTEM account should have Full Control permission on all Pcounter-controlled printers. In most cases it is not necessary to specify this permission.

The service software can be updated without needing to reinstall it. Make sure that the service is stopped before updating, or an error will occur. Any configurations which have been previously applied will not be affected.

Datatypes and Spooling

Often Pcounter is being used to determine the attributes of a print job before allowing it to print; for example, in rules, allowing paper sizes, ensuring that there is sufficient credit to print, and counting jobs in advance. In these cases it is necessary for the printer's **Spooling** setting to be set to **Start printing after last page is spooled**. This ensures that available print job information will be complete when the job starts printing. Jobs which begin printing before the last page is spooled are likely to be mishandled in the above circumstances.

The print job datatype is another important printer setting. The EMF datatype is a metafile, and the RAW datatype is the native driver format, such as PostScript or PCL.. RAW datatype is best for Pcounter operations - this allows Pcounter to read the exact data that will be sent to the printer and handle the job accordingly. If EMF datatype is used, then Pcounter has to rely on the spooler print job record settings before the job prints, which are not always accurate. RAW datatype will be used if **Enable advanced printing features** is **turned off** in the printer properties.

Each of these settings can be found on the **Advanced tab** of the **Printer Properties**.

The Pcounter Data Server service

The Pcounter Data Server service manages all of Pcounter's printer accounting data. It can run on any Windows NT4 or later Workstation or Server, even if it is not a Pcounter print server. Each Pcounter print server has a Data Server global setting, which can be pointed to the same server - this allows all printing data to be kept in one central location for easy access. The Pcounter Data Server service only needs to be run on one computer.

- Make sure that a Pcounter share is created, and save Global settings on that server.
- The Pcounter log file and account balance databases are kept in the `\\DataServer\Pcounter\Data` directory on the Data Server, where `\\DataServer\Pcounter` is the Pcounter shared directory.
- Users should be given read permission to the Pcounter share. This directory contains Global Settings and the popup client code database.
- Administrators, users who need to manage account balances, and users who need to get printing statistics should be given read/write permission to the `Data` directory. For privacy and security purposes, normal users should not be given any access to this directory.

Upon installation, the Pcounter Data Server service will be configured with Startup Type: Automatic, which means that it will run at system boot time. However, it is possible to start and stop the service any time using Pcontrol from any Windows NT or later computer on the network.

After the first time that the Pcounter Data Server service has been installed, the Server service (and all dependent services) will **need to be restarted**, but **only if Pcounter is running on printer servers other than the data server**. This can be done manually using Control Panel, Services on the server, or the server can be rebooted. This only needs to be done once - it is not necessary to do it again if the Pcounter Data Server service is reinstalled or updated later.

The service software can be updated without needing to reinstall it. Make sure that the service is stopped before updating, or an error will occur. Any previously saved configurations will not be affected.

Configuring the Data Server service

Create new log file and rename old log file

The Data Server can periodically rename the `PCOUNTER.LOG` file so that each log is separated by time intervals. 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.

Account balance notification

The Data Server can optionally send a broadcast message to users which informs 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.

If the Data Server is down

- When a printer's Accounting setting is **User account balances and log file**, a job will not start printing if the Data Server is down. If the Data Server goes down after a job begins printing but before the job is logged, then Pcounter will store the job information locally until the Data Server is started again.
- When a printer's Accounting setting is **Log file only**, jobs will print normally and Pcounter will store the job information locally until the Data Server is started again.
- If the **ID and password** popup is being used, then popup passwords will not be verified.

Pcounter port monitors

Pcounter port monitors are required in order for Pcounter to perform printer accounting. Port monitors are Windows DLLs which are used by the spooler to send print data to printers.

It is necessary for the Pcounter Printer Control service to be running on Windows print servers where Pcounter port monitors are installed. If the Pcounter Printer Control service is stopped, printing will stop until it is running again.

Installing port monitors

Unfortunately, Windows does not support port installation from remote computers, so it is necessary to install Pcounter on the print server, and then install the ports locally. Using Pcontrol, install the port monitors in the Pcounter server configuration (Services/Ports tab).

Using the Pcounter Port Wizard

The Pcounter Port Wizard is found on the Printers tab of the Pcounter server configuration. It can be used to:

- Create new Pcounter ports - the wizard will make the best choice based on the current port configuration.
- Edit/configure existing Pcounter ports.
- Remove Pcounter ports and restore the original ports.

The port wizard can be used to create and edit/configure Pcounter ports on remote servers and terminal sessions. This is not possible via the Printer Properties.

Manually adding/configuring Pcounter ports via Printer Properties.

Open any printer's **Properties**, select the **Ports** tab, and press the **Add Port** button. The Pcounter port monitors will appear in the **Available Printer Ports** list, so that it can be saved to the printer's configuration. Press the **Configure Port** button to edit existing Pcounter port settings.

Updating port monitors

It is necessary to stop the Spooler service in order to update the Pcounter port monitor software. Pcontrol provides a way to update the Pcounter port monitors from remote computers by stopping the Spooler, copying the files, and then restarting the Spooler. Stopping the Spooler will interrupt current print jobs. All printers can optionally be paused and resumed in order to keep new jobs from starting before updating.

The Pcounter 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 print server. 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.

The Pcounter AppSocket port is functionally equivalent to the Windows 2000 TCP/IP printer port.

A TCP/IP port number must be specified 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 PJL commands to get the pagecount from the printer. While many printers support PJL, they may not all support PJL bidirectional page counting.
- **PS/PJL Bidirectional:** Pcounter uses PostScript commands to get the pagecount from the printer, which are separated by PJL to get job status. This choice is probably the best if the printer supports PostScript and PJL.
- **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.

Support for the pagecount type can be tested 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.

The Pcounter LPR Port

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

All page counting is manual when using LPR.

It is necessary to 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 this will represent a print queue name, which it is necessary to determine.

The LPR/LPD standard requires that the LPR client specify the number of bytes in the print job before it is submitted. For this reason:

- Jobs which are submitted using datatypes other than RAW (such as EMF, called Metafile Spooling) must be converted to RAW first before they can be sent to the LPD host. This means that jobs will take longer to print because of the conversion process. Typically EMF jobs are submitted from other Windows clients. Use of the RAW datatype can be configured in two places: **Printer Properties, General, Print Processor**, and **Document Defaults, Advanced, Metafile Spooling**. (RAW print jobs imply that the printer's native language is being used, such as PCL or PostScript.)
- On Windows 2000 and later, RAW datatype will be used if **Enable advanced printing features** is **turned off** in the printer properties.
- Print jobs must be completely spooled before jobs can be sent. Pcounter will automatically set the printer to start printing after the last page is spooled.

Local port bindings

- **RFC 1179 compliant** - use this only if RFC 1179 compliance is required by the remote LPD host. The local TCP port numbers are restricted to the 721-731 range. This could result in conflicts with other LPR ports since only 11 local ports are available. Most devices do not require RFC 1179 compliance.
- **Typical** - uses local TCP ports 512-1023.
- **Extended** - uses local TCP ports 1024 and greater. The advantage here is that local port conflicts are less likely between other LPR ports and applications.

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 if Pcounter should count incomplete jobs.

The Pcounter Parallel Port

The Pcounter parallel port monitor prints to local LPT ports. If another print queue is printing through the built in LPT port, then jobs will be redirected to this queue. If no other print queues are printing through the built in LPT port, then the Pcounter Parallel port monitor will write directly to the physical port device.

All page counting is manual when using LPT ports.

The Pcounter OtherPrinter Port

The Pcounter OtherPrinter port sends jobs to other print queues. The OtherPrinter port cannot print to remote Windows printer shares - the queue must be located on the same Windows print server.

The purpose of the OtherPrinter port is to support printers which use network protocols that are not directly supported by Pcounter port monitors, such as Appletalk and DLC, USB, or if it is preferred to keep using currently installed ports.

The easiest way to setup the OtherPrinter port is:

- Create a new printer using the same driver and the same port configuration as the current printer.
- Assign the OtherPrinter port to the current printer, using the new printer as the Output printer name.
- This way, it won't be necessary to reconfigure any workstations to print to a different printer.
- Do not share the new printer, or else users will be able to print to it and bypass Pcounter printer accounting.
- Likewise, if necessary, remove any permissions for users to use the new printer locally.
- The SYSTEM account should have Full Control permission on the new printer.

All page counting is manual when using OtherPrinter ports.

Number of jobs counted ahead of printer

Since the OtherPrinter port is printing to a queue instead of to an actual printer, it may move jobs to the queue faster than they can actually print. Pcounter accounts for and logs the job as soon as it has been sent to the output queue without knowing whether the job has been printed. This setting controls the number of jobs which can be in the output queue at any time. For example, a setting of one means that no jobs will be moved until the output queue is empty.

Quick start summary

Keep in mind that Pcontrol enables all Pcounter configuration to be performed from any station on the network (except for port setup, which must be done locally - however, port monitors can be updated from remote stations once they have been installed). Likewise, it is not necessary to run Setup to install the Pcounter software program group and icons on every desktop; it can be installed in a shared network folder so that programs can be accessed through network browsing.

Use Pcontrol to install (or uninstall) the services and port monitors. Running Setup to install the software on the desktop does not automatically install the services and port monitors. Likewise, uninstalling the software from the desktop does not automatically uninstall the services and port monitors.

In order to access the Pcounter configuration for an Windows computer, just browse the network in Pcontrol, select it, and press the **P** button or choose the **Server, Pcounter, Pcounter configuration** menu. Access the Server menu by right clicking on a computer.

Setup the Data Server

- In Pcontrol, select the Windows computer which will be the Data server and choose Pcounter configuration.
- Create the Pcounter shared directory - this is where all printing data is stored. Don't forget to set the appropriate permissions to the share and its contents.
- Set the Global and Popup settings.
- Select the Services/Ports tab and install the Data Server service.
- Press the Configure button if a new log file should be written periodically and/or configure custom account balance notification messages.
- Start the Data Server service.

Setup a print server

- In Pcontrol, select the Windows computer which is hosting printers and choose Pcounter configuration. A print server can also be the Data server.
- Set the Global and Popup settings - on the Global Settings tab, they can be imported from the Data server (or any other previously configured computer) so that they need not be entered again.
- (Optional) A default printer configuration can be set which will apply to all printers which do not have their own configurations.
- Select the Services/Ports tab and install the port monitors.
- Select the Printers tab. Configure Pcounter accounting settings, prices, and rules on the required printers. Press the Properties button to create and configure Pcounter ports for the printers.
- Select the Services/Ports tab, install and start the Printer Control service.
- Start printing now!

Setup client utilities

- For PPopup and/or Wbalance, all that is necessary is to add an icon or shortcut to local Startup groups or login scripts.
- Users who will be managing user account balances and reports will need the PAdmin.exe utility.

Keeping an eye on what's happening

- Quick printer histories can be obtained by selecting the printer in Pcontrol, right-clicking, and choosing Pcounter, Print History.
- For more comprehensive reports and to view user print activity, run PAdmin from the program icon/shortcut, or in Pcontrol, right-click on a domain or server and select Pcounter, Accounting.

Tracking printers attached to Windows 9x workstations

Pcounter can also monitor printers which are connected to parallel ports of Windows 9x workstations, enabling these printers to be shared with other users, while saving money by not needing to purchase external print servers. However, even if the printer is not shared and is used by a single user, Pcounter can still monitor its usage. The data from Win 9x printers is sent to the Windows Data Server and is integrated into the Pcounter log files and accounting databases.

The printer's Pcounter configuration can be administered remotely using Pcontrol if the printer is shared and the workstation is running the Remote Registry Service. However, as they are for NT printers, port installation must be done on the workstation where the printer is located.

To configure a Win9x printer for Pcounter, browse to the printer in Pcontrol and select the Printer, Pcounter, Pcounter, Configuration menu or press the **P** button on the toolbar. Select the Settings and Prices to use with this printer. Install the Pcounter Parallel Port Monitor and select which port to use (PCOUNT_LPT1, PCOUNT_LPT2, etc.).

There are certain restrictions as to how Pcounter manages printers on Win 9x compared to their NT counterparts:

- Banner pages are not supported.
- Rules are not supported - however, there are job size and pagecount limits in case large jobs should be prevented from printing to these printers.
- Pausing of all jobs is not supported.
- The Pcounter popup is not supported.

Security

Windows 9x is generally insecure, and the Pcounter settings are stored locally. In environments where users are charged for printing, it is possible for malicious users to tamper with printer settings in order for their print jobs to escape detection. In such cases it might be a good idea to enforce system policies (see the Windows 9x Resource Kits) to prevent access to Printers, Control Panel, and Run (on the Start Menu). Access to RegEdit and the DOS Command Prompt can also be restricted.

Things to look out for:

- Changing the printer port from PCOUNT_LPTx to LPTx to escape print job detection.
- Users accessing the registry to change Pcounter configuration settings.

Messages

All messages from Pcounter printers on Win 9x (rejected jobs, insufficient balance, etc.) are sent to users from the NT Data Server.

Global Settings

The computer where the Pcounter Data Server service is running needs to have a shared directory (named Pcounter) where the Pcounter utilities can read configuration information.

The Pcounter share should be readable by all users using Pcontrol (to configure Pcounter) and PAdmin. Pcontrol saves the file `PCOUNTER.INI` in the Pcounter shared directory.

Delete Paused Jobs After ? Minutes

Paused print jobs can be deleted after a specified number of minutes. A value of zero (0) disables this feature. This setting only applies to printers using Pcounter port monitors.

Numerical Format

The numerical format determines how costs and balances are displayed.

- **Pages**
One accounting unit = One page. Use this if for allocation of printing quotas in pages.
- **Currency**
Accounting is kept in terms of local currency. The type and format of the local currency are determined from local Windows settings.

Get User Information from

If the Windows network is using:

- **Domains**
If the Pcounter server is not a domain controller, but is a domain member, specifying the Pcounter server (ie. the local computer) typically allows Pcounter to find any domain controller. If the Pcounter server is a domain controller, use the Pcounter server. Otherwise, select Primary Domain Controller.
- **Workgroups**
Select the Windows Server where user accounts are located.

Log rejected jobs

Print jobs which are rejected for any reason (insufficient balance, invalid paper size, etc.) can be logged to a text file called `REJECT.TXT`, on the Data server in the `\PCOUNTER\Data` directory. This file will grow indefinitely, so make sure it is deleted periodically.

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 Active Directory. 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.

Data Server

The Data Server is the computer where the log file is kept and where the user account balance and popup client code databases are stored. This server must run the Pcounter Data Server service.

The Pcounter Data Server service manages all of Pcounter's printer accounting data. It can run on any NT 4.0 or later Workstation or Server, even if it is not a Pcounter print server. Each Pcounter print server has a Data Server global setting, which can be pointed to the same server - this allows all printing data to be kept in one central location for easy access. It is only necessary to run the Pcounter Data Server service on one computer.

- Make sure that a Pcounter share has been created, and save Global settings on that server.
- The Pcounter log file and account balance databases are kept in the `\\DataServer\Pcounter\Data` directory on the Data Server, where `\\DataServer\Pcounter` is the Pcounter shared directory.
- Users should be given read permission to the Pcounter share. This directory contains Global Settings and the popup client code database.
- Administrators, users who need to manage account balances, and users who need to get printing statistics should be given read/write permission to the `Data` directory. For privacy and security purposes, normal users should not be given any access to this directory.

Default Printer Configuration

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

When Pcounter loads, it looks for a printer's individual configuration. If one is not found, then it uses the server's default printer 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:	Delete job
Banner (separator) template:	Blank/None
Duplex Handling:	Ignore
Job size limit:	Zero/None
Job pagecount limit:	Zero/None
Disable print notification:	No
Pause all jobs:	No
Count jobs in advance:	No
Delete duplicate jobs:	No
Allow unknown users to print:	Yes
Reject job types:	None
Enable popup window:	No
Keep job paused after popup:	No
All paper sizes:	Allowed
All Prices:	Zero
Default paper size:	Letter

LPD Server

The Pcounter Printer Control service can be used as a LPD server to accept jobs from LPR clients.

Advantages of using the Pcounter LPD server over the Microsoft TCP/IP Print Server (LPDSVC)

- Pcounter exports only chosen printers as LPD printers. Simply check the boxes of printers which should be LPR accessible. The LPDSVC always exports all printers as LPR printers.
- Pcounter LPD can restrict access to printers based upon specified IP addresses or IP address ranges. The LPDSVC does not have this feature.
- Pcounter LPD can pause all jobs. The LPDSVC does not have this feature.
- The Pcounter LPD job pausing feature is integrated more efficiently with the Web Client than using automatic Standard Pause or Super Pause in the Pcounter printer configuration with the LPDSVC.
- Pcounter LPD interprets the document names of jobs from Apple OS X correctly, LPDSVC does not.

Printers which service LPD and authenticated Windows clients

There may be situations where the Web Client is required to authenticate LPD jobs on printers which are also used by authenticated Windows clients. In this case, the Pcounter LPD server should be set to pause all jobs, while the general Pcounter printer configuration should not have any pausing or popup set. This will allow Windows jobs to print straight through without pausing, while LPD jobs will be paused, pending input from the Web Client.

Printers which require PPopup and/or Web Client for all jobs

If all jobs to a particular printer require input from PPopup and/or Web Client, then make sure that **Enable Popup Window** is set in the Pcounter printer configuration, and that **Pause all jobs** is set in the Pcounter LPD printer configuration.

Notes

- The TCP/IP Print Server service should be set to Manual or Disabled startup if it is installed. Pcounter LPD cannot be activated if another process is listening on IP port 515, as the LPDSVC does.
- Once the Pcounter LPD server is running and activated, it is not necessary to restart the Pcounter Printer Control service if configuration changes are made.
- Only command code **-f** (plain text filter) as defined in RFC 1179 is supported. No other filters or banner commands are supported at this time.
- LPQ commands are supported, but LPRM commands are not.

Getting jobs from NetWare queues

The Pcounter Printer Control service can be used as a NetWare print server to retrieve jobs from NetWare queues and transfer them to Windows print queues, where they can be incorporated into the Pcounter for Windows accounting system. This feature requires the Novell Client, which is available at <http://www.novell.com>, and will not work with Microsoft's Client for NetWare. The configuration tab for this option will not appear if the Novell Client is not installed.

- To setup, use NWAdmin to create a print server object for Pcounter.
- In Pcontrol, select the Windows machine to be used as a NetWare print server, right-click, and select Pcounter Configuration. Choose the NetWare tab.
- Enter the NetWare print server object that was created in NWAdmin. Optionally set a password.
- For each NetWare print queue, assign a destination local Windows printer.

The NetWare print server login will not conflict with users logged onto the desktop of the local machine.

Security

If the **Allow unknown users to print** option is enabled, then it does not matter whether usernames are the same on both NetWare and NT. Otherwise, jobs from NetWare users must have corresponding Windows user account names, or the jobs will be deleted.

Accounting

User account balances

If it is not necessary to enforce printing quotas for users, then skip this section, but make sure that Pcounter printer configurations are set to **Log file only**.

User account balances are stored in database files on the computer designated as the Data Server in Global Settings, in the \\DataServer\Pcounter\Data directory. It is not necessary for all users to logon to this computer, it is just a place where the information is stored.

Numerical formats

- **Pages**
One accounting unit = One page
- **Currency**
Accounting is kept in terms of local currency. The type and format of the local currency are determined from local Windows settings.

Account balances and Low balance limits

Each user gets an account balance and a low balance limit. The low balance limit is the minimum allowable account balance before printing access can be denied. Typically the low balance limit should be zero, and unlimited credit can be granted to special users.

Use Pcounter Administrator (Padmin) to modify user and group account balances and low balance limits.

The per-page cost for each print job is defined in the printer's configuration. If money is being collected for printing, and the cost of each print job should be deducted from a user's account balance, then use positive prices. Use negative prices to keep a running total of print activity in user account balances.

If **Accounting=User account balances and log file** has been set in the printer configuration, then Pcounter will maintain user account balances. For each print job, the account balance is charged (the number of pages printed) * (the paper size price). If low balance limit options should be enforced, then a user's account balance must not exceed the low balance limit, or else printing is denied.

If paper size 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

If Windows users are logging on normally, there is no need to create special printing accounts for them. However, **if an Pcounter account balance entry does not exist for a user**, then both the account balance and low balance limit for that user are assumed to be zero. However, default balances and low balance limits can be automatically set (for new users and users who have had no print activity) in PAdmin. Just select **Preferences, Automatically initialize balances to default values on startup/refresh**. The next time PAdmin is started, manually refreshed, or another domain is selected, then the default values will be set.

If shared logon printer accounting is being used where users do not have their own accounts, please read the shared logon section in the Popup chapter.

The PCOUNTER.LOG log file

Pcounter keeps a running log of all print activity in the log file \\DataServer\Pcounter\Data\PCOUNTER.LOG. Users using PAdmin should be granted Read/Write privileges in the directory where PCOUNTER.LOG is kept.

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:

- DomainName\UserName
- Document name (Pcounter) or Accounting Operation (PAdmin)
- Printer name (Pcounter) or User performing transaction (PAdmin)
- Date
- Time
- Computer from which printing or accounting transaction originated
- Client code
- Subcode
- Paper size
- Features (Duplex, Number of copies)
- Size in bytes
- Page count
- Cost
- Account Balance

Pcounter Administrator (PAdmin)

PAdmin is a Win32 utility for maintaining user account balances, viewing user print histories, and generating printing reports. PAdmin runs on any Windows version.

PAdmin requires 2 DLLs, RADMIN32.DLL and RLOCAL32.DLL, when running on Windows 9x. These DLLs are included with the Windows NT Server Tools for Windows 95. They can be found on the Windows NT Server 4.0 CD, in the \CLIENTS\SRVTOOLS\WIN95 directory. They can also be downloaded from **<http://www.microsoft.com/windows/downloads/bin/W95nexus.exe>**. The CD versions are more recent. If the Active Directory Client Extension for Win9x is installed, then these DLLs will already be present.

- PAdmin can browse user lists from Active Directory domains and organizational units, NT4-compatible domains, and local accounts on servers and workstations. Active Directory support requires installation of the Active Directory Client Extension on Windows 9x and NT 4.0.
- All of the functions are within easy reach. Only users who have Read/Write permission to the \\DataServer\Pcounter\Data directory can modify account balances and the PCOUNTER.LOG file.
- 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 to perform 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.
- PAdmin can be launched by double clicking on the program icon or by right-clicking on a server or domain in Pcontrol and selecting Pcounter, Accounting. Multiple instances of PAdmin can be run for multiple domains.
- Right-click on any object for a quick popup menu.
- If PAdmin runs under Windows 9x, it cannot display local groups, only domain groups.

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.

Database functions

Remove deleted records - will reclaim wasted space from the database file.
Reindex - will create a new index for the database file.
Import - please see the appropriate popup section.

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 `\\DataServer\Pcounter\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. All automated transactions will run on the Data Server, and the Task Scheduler service must be running.

Automation support in PAdmin requires Windows NT or later.

ACCOUNT.EXE is used to perform the transactions. If a transaction is scheduled by running PAdmin on the Data Server, then it assumes that ACCOUNT.EXE is located in the same folder as PADMIN.EXE. If a transaction is scheduled by running PAdmin on a remote computer, then it reads the `InstallDirectory` key from `\\DataServer\PCOUNTER\PCOUNTER.INI` and determines the relative location of ACCOUNT.EXE.

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.

ACCOUNT.EXE

ACCOUNT.EXE is a Win32 console command-line utility which can be used to type in accounting commands or for automating batches of accounting operations, such as in a batch file.

Type **ACCOUNT** to list command-line options.

ACCOUNT.EXE uses the Global Settings information stored in **PCOUNTER.INI** on a Pcounter server.

ACCOUNT.EXE requires 2 DLLs, RADMIN32.DLL and RLOCAL32.DLL, when running on Windows 9x.

These DLLs are included with the Windows NT Server Tools for Windows 95. They can be found on the Windows NT Server 4.0 CD, in the `\CLIENTS\SRVTOOLS\WIN95` directory. They can also be downloaded from <http://www.microsoft.com/windows/downloads/bin/W95nexus.exe>. The CD versions are more recent. If the Active Directory Client Extension for Win9x is installed, then these DLLs will already be present.

Using ACCOUNT.EXE as a web CGI application

ACCOUNT.EXE can also be setup to run as a simple HTTP-based CGI account balance management application on any Windows web server. This is useful for users who need to manage account balances easily without requiring the full functionality of Pcounter Administrator.

ACCOUNT.EXE has been tested on IIS 4-6, and Apache 2.0.43. Other web servers should also work.

Web server location

- IIS 4.0 - The web server should run on the Pcounter data server.
- IIS 5.0 - The web server can run on any server.
- Apache and others which run as a service using the SYSTEM account should run on the Pcounter data server.
- Apache and others which run in user mode or as a service using a user account can run on any server.

Installation in Internet Information Server

- **Copy ACCOUNT.EXE** to an executable directory, such as **cgi-bin**.
- If an executable directory does not already exist, create a new directory on the web site and copy ACCOUNT.EXE into it.
- Find the new directory in Microsoft Management Console, and open the Properties of the new directory.
- On the **Directory** tab, set **Execute Permissions** to **Scripts and Executables**. Read permission is not required.
- On the Directory (or File) Security tab, set the authentication permissions and IP address restrictions accordingly. Browsers other than Internet Explorer may have problems with authentication methods other than Basic authentication. If Basic authentication is allowed, it may also be necessary to specify the default domain.
- User credentials are then used for access permissions to the Pcounter share for accounting transactions. Users who do not have write permission to \\DataServer\PCOUNTER\DATA will be able to view the web page but will not be able to modify or view account balances.
- Type **ACCOUNT CONFIG** from a command prompt on the web server to setup the correct parameters.

Additional configuration information for IIS 6

CGI applications are disabled by default. It is necessary to configure ACCOUNT.EXE as a CGI application in order for it to run properly.

- In the **Application Server management console**, find the web server computer, expand it, and choose **Web Service Extensions**.
- On the Action menu (or right-click), choose **Add a new Web service extension**.
- Set **Extension name** to ACCOUNT.EXE or some other descriptive text.
- Add the full path to ACCOUNT.EXE to the **Required files** list.
- Make sure that **Set extension status to Allowed** is checked/enabled.

Installation on Apache and others

- **Copy ACCOUNT.EXE** to an executable directory, such as **cgi-bin**.
- Password protect the file or directory as needed.
- The credentials of the web server process (such as SYSTEM for a service) are then used for access permissions to the Pcounter share for accounting transactions. Since all users who access this web page will be allowed to modify or view account balances, it is important to keep it secure.
- Type **ACCOUNT CONFIG** from a command prompt on the web server to setup the correct parameters.

Access URL

- <http://webserver/cgi-bin/account.exe>

WBALANCE

WBALANCE is a small Windows utility for users to view their account balances quickly.

WBALANCE can be added to the Startup group or to any login script. It will update the balance display if it is left running; and will also display the balance when it is minimized.

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

WBALANCE does not access the server's accounting database directly; it obtains balance information through communication with the Pcounter Data Server. This connection can be configured beforehand by creating PCOUNTER.INI in the same directory where WBALANCE.EXE is stored. Use the following format:

```
[Preferences]
DataServer=\\ANDYTRON
```

where \\ANDYTRON is the name of the computer running the Pcounter Data Server service. The double-backslash before the computer name is required.

Otherwise, the user will be asked to choose from a list of computers.

Prevent users from selecting another server by adding the following line to the Preferences section of PCOUNTER.INI:

```
DisableSelectServer=1
```

WBALANCE remembers its settings by storing PCOUNTER.INI in the same directory where WBALANCE.EXE is located. If it is kept in a shared directory and users should not change the server setting, then create PCOUNTER.INI as shown above, and allow users only Read privileges in that directory.

WBALANCE automatically runs minimized in the system tray.

- 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.

To run WBALANCE in a normal window, add the following entry to PCOUNTER.INI:

```
[Preferences]
RunNormal=1
```

BALANCE.EXE - Web CGI application for users to check their account balance

BALANCE.EXE can run as a simple HTTP-based CGI application for users to check their account balance on any Windows web server. It has been tested on IIS 4-6, and Apache 2.0.43. Other web servers should also work.

Web server location

- BALANCE.EXE can run on the Pcounter data server but can actually be located on any web server.

Installation in Internet Information Server

- **Copy BALANCE.EXE** to an executable directory, such as **cgi-bin**.
- If an executable directory does not already exist, create a new directory on the web site and copy BALANCE.EXE into it.
- Find the new directory in Microsoft Management Console, and open the Properties of the new directory.
- On the **Directory** tab, set **Execute Permissions = Scripts and Executables**. Read permission is not required.
- On the Directory (or File) Security tab, set the authentication permissions and IP address restrictions accordingly. Browsers other than IE may have problems with methods other than Basic authentication. If Basic authentication is allowed, it may also be necessary to specify the default domain.
- A successful logon will display a web page showing the user's account balance.

Additional configuration information for IIS 6

CGI applications are disabled by default. It is necessary to configure BALANCE.EXE as a CGI application.

- In the **Application Server management console**, find the web server computer, expand it, and choose **Web Service Extensions**.
- On the Action menu (or right-click), choose **Add a new Web service extension**.
- Set **Extension name** to BALANCE.EXE or some other descriptive text.
- Add the full path to BALANCE.EXE to the **Required files** list.
- Make sure that **Set extension status to Allowed** is checked/enabled.

Installation on Apache and others

- **Copy BALANCE.EXE** to an executable directory, such as **cgi-bin**.
- Password protection should be done using an LDAP or other NT security package.
- A successful logon will display a web page showing the user's account balance.

Database Security

- BALANCE.EXE does not access the server's accounting database directly; it obtains balance information through communication with the Pcounter Data Server. This connection can be configured beforehand by creating BALANCE.INI in the same directory where BALANCE.EXE is stored. Use the following format:

```
[Preferences]
DataServer=\\DATASERVER
```

If BALANCE.INI does not exist, BALANCE.EXE will assume that the web server is the Pcounter Data Server.

Access URL

- **(Normal)** <http://webserver/cgi-bin/balance.exe>
- **(Small Window)** `Check your print balance
`

Using a custom balance web page

- Create **balance.html** in the same directory as BALANCE.EXE.
- Use the following strings for value substitutions on the web page:

%U - User name
%B - Account balance

Printer Configuration Settings

Accounting

None:	No page counting for this printer
Log file only:	Count pages, maintain log file, no user account balances
User account balances and Log File:	Count pages, maintain log file & user account balances

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

Banner (separator) template

Pcounter can optionally include a nice-looking banner with the print job.

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

- **None:** No banner printed
- **PCL4 (Letter):** HP LaserJet Series II or equivalent - letter size paper
- **PCL5 (Letter):** HP LaserJet III or equivalent - letter size paper
- **PCL5/PJL (Letter):** HP LaserJet 4 or equivalent - letter size paper
- **Postscript (Letter):** Any Postscript printer - letter size paper
- **PCL4 (A4):** HP LaserJet Series II or equivalent - A4 size paper
- **PCL5 (A4):** HP LaserJet III or equivalent - A4 size paper
- **PCL5/PJL (A4):** HP LaserJet 4 or equivalent - A4 size paper
- **Postscript (A4):** Any Postscript printer - A4 size paper

How to customize 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> <CLIENT_CODE>
```

- 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.

Include banner in pagecount

If a banner (separator) 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.

Pause all jobs

Pcounter can pause all jobs automatically. Users will have to release each job in order for them to be printed - this can be done from the Explorer Printers list or Print Manager.

- **Standard pause:** Pcounter pauses the job in the usual manner.
- **Super pause:** Pcounter changes the job so that normal users cannot resume them. Super pause is used automatically if the popup window is enabled.

Using Standard pause, users can be prevented from resuming their own print jobs which have been paused by Pcounter by setting certain security attributes of the printer. The CREATOR/OWNER object, users, and any groups in question must have only Print permission. Any users with only Print permission cannot delete, pause, or resume any print jobs. However, all job document names will likely only be called "Remote downlevel document", which is not very descriptive. This is a limitation of Windows. Also, in some instances, jobs are not removed from the print queue after they have printed - and have to be deleted manually. Therefore, it's better to use **Super pause** and give CREATOR/OWNER Manage Documents permission. This way, the job document names will appear as they should, and users will not be able to resume their 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. Use the **Faster Performance** setting if page counts and cost are being shown in Ppopup information messages. Using the **Slower Performance** setting can save CPU cycles when multiple print jobs are being processed at the same time, and can be used if the page counts and cost are only being shown in Pcontrol and Pcounter Station.

The Windows Spooler may display a page count anyway without this feature enabled, but only if jobs are submitted from other Windows NT or later clients. However, this page count is not always accurate.

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.

Disable print notification

If this box is checked, then Pcounter will clear the Notify name from the print job configuration.

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.
- If an **Unknown** print job is not rejected, it will be counted as 0 pages.
- Rejected print jobs will be deleted and a broadcast message will be sent to the user who submitted the job.

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 the Windows account database. Leave this box unchecked for Pcounter to delete these jobs.

If Pcounter has been configured to delete jobs from unknown users, an "Error getting user information" entry will be written to the application event log. Otherwise the job will be logged in the PCOUNTER.LOG file as a member of the ***Unknown** domain.

Enable popup window

If PPOPUP is running at the workstation, a popup window will appear after each print job, allowing users to enter additional information for the logging of the job, such as client matter numbers, job codes, or shared login accounting. Jobs are automatically Super paused.

Keep job paused after popup

Typically the pause is removed and a job is released after the user processes the popup. However, the job can be kept in a paused 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."

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

Prices

Each printer 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 printer 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 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

Pcounter's rules allow load balancing of printers based on print job attributes.

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.
- Jobs can be load balanced across multiple printers. Please see the following section for more details.

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

- If jobs are printing using the RAW datatype, 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.

Load balancing jobs across multiple printers

Pcounter includes a print job load balancing option which is more intelligent than Windows printer pooling. Printer pooling allows multiple ports to be assigned to a single print queue. However, ports in a printer pool are always used in the same order - the first job is always assigned to the first port, and the second port only receives a job if the first port is busy.

Pcounter load balancing differs from printer pooling in that each port should be assigned to its own print queue. The print queue to which jobs should be submitted will be called the Master queue, and should be shared. The print queues to which jobs are distributed are called child queues, and should not be shared. Generally, users should not be allowed to submit jobs directly to child queues.

Load balancing is configured on the Rules/Balancing tab of the Pcounter printer configuration of the master queue. Modify the rule called **Load balance jobs on**, and choose the child print queues to which jobs should be distributed.

- The load balancing configuration is dynamic. It is not necessary to restart the Pcounter Printer Control Service when changes are made.
- Jobs will be distributed to child print queues which have the least number of jobs waiting, or else distributed evenly to child print queues in a round-robin fashion.
- When jobs are distributed to a child print queue, no Pcounter rules or other processing will occur on the master queue. All processing will be handled by the Pcounter port on the child queue. Therefore, the Pcounter printer configurations should be set on the child queues as needed.
- If one of the printers is down, just pause its child print queue. Jobs will not be distributed to child print queues which are paused. This makes it easy to manage if one of the child printers is down. If the master print queue is paused, then no jobs will reach child print queues.
- If Pcounter Popup or Web Client is required, the Pcounter printer setting **Enable Popup Window** should be set only on the master queue, and not on any of the child queues.
- The Pcounter printer setting **Count jobs in advance for display** is ignored, unless **Enable Popup Window** is being used.
- When Spooler notification messages are being used, make sure that messages are sent to users and not computers. This setting is found in Start/Settings/Printers/File/Server Properties/Advanced.
- Pcounter load balancing requires no additional CPU overhead, and spool files are not rewritten.

Load balancing configurations

Figure 1: Recommended Configuration

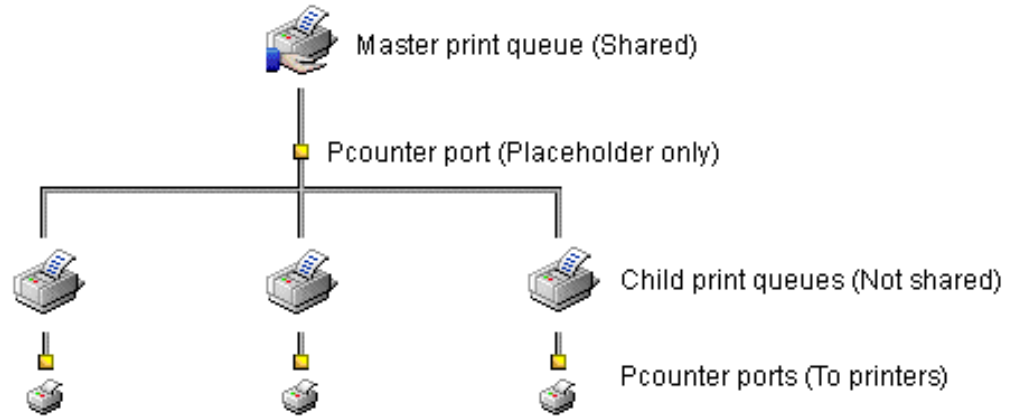
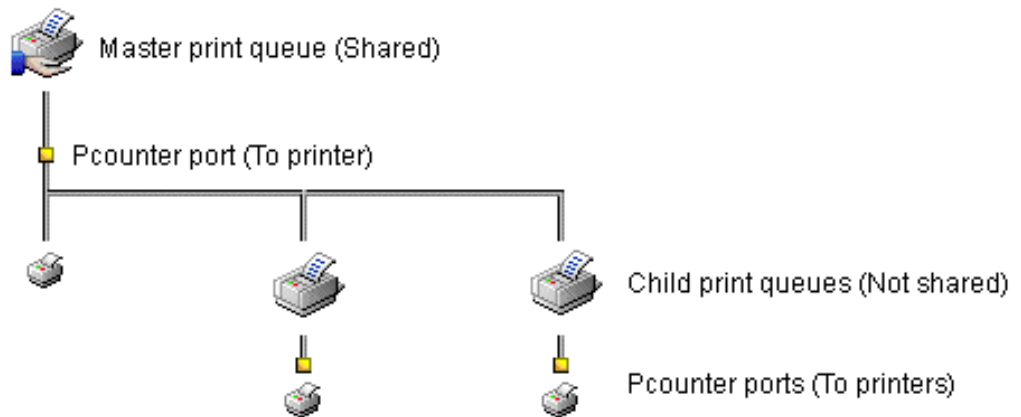


Figure 2: Alternate Configuration



The recommended configuration shown in Figure 1 uses a Pcounter port which is only a placeholder, and no jobs actually print through that port. This is achieved by making sure that the master queue **is not selected** as a child queue. In this case it does not matter what type of Pcounter port is used, nor are the actual port settings used in any way. However, this port should not be assigned to any other print queues. All jobs are distributed to child print queues.

The alternate configuration shown in Figure 2 uses a Pcounter port which is configured for printing. In this case, the master queue **should be selected** as a child queue. Some jobs will be kept in the master queue for printing instead of being distributed to child print queues. However, this configuration is not as flexible; for instance, if the printer on the master queue is down, the only way to disable jobs from printing on that printer is to remove the master queue from the load balancing configuration.

Using the Popup - Print job client billing and Password Security

Popup Overview

Any Windows machine 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 printer configuration. Pcounter uses Super Pause automatically if PPOPUP is enabled.

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

It is not necessary to run SETUP on each machine where PPOPUP runs.

`\PcounterInstallDir\NT\PPPOPUP.EXE` can be copied to a shared network folder or to the local machine.

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\PPPOPUP [/options]
```

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

Requirements and limitations

- **Pcounter is running on a Windows NT 4.0 server**

Windows 9x clients must have unique logon accounts. This does not mean that users require individual logon accounts, but that each station needs a unique logon account. For example, workstations can logon as STATION1, STATION2, etc. However, if everyone is logged on as GUEST, PPOPUP will not work reliably. There are no problems if users are logged on with their own account names. This restriction only applies to Windows 9x clients, Windows NT or later clients do not have this restriction.

- **Pcounter is running on a Windows Terminal or Citrix server**

Each session must have a unique logon, or else popups will occur in multiple sessions.

- **Pcounter is running on Windows 2000 or later**

No limitations.

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.

/autocode=serverName - PPOPUP reads its configuration from serverName, and loads the client code database if necessary. Using PPOPUP with this option only allows users to set their Auto client code, and **will not pop up** a window for any print jobs. Users can double-click on the PPOPUP icon to set their Auto client code.

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

/matchuser - The local setting **Match Username on job** 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.

/term - Terminate PPOPUP.

PPOPUP Local Settings

When the PPOPUP Preferences menu is selected, the user will see a list of 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 one RPC request. However, any servers which are not running Pcounter or are hosting print 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 \\DataServer\Pcounter\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 or less.

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 printer 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 printer 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 (Shared logon accounting)

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. It can also be used for shared logon printer accounting.

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 printer configuration.

Password authentication

- **PrinterPopupUsers only** - Passwords will only be checked from the shared logon PrinterPopupUsers database. Jobs are deleted after 3 incorrect attempts. The print job owner name will be set to ***username** after a PPopup logon is successful. This allows Pcounter to determine that the job owner is a PrinterPopupUser and not a standard domain user.
- **PrinterPopupUsers and domain passwords** - Passwords will be checked from the domain and the shared logon PrinterPopupUsers database. 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.

Allow client code form

When enabled, users can manually enter text which will be recorded in the client code field of the PCOUNTER.LOG file. No validation will be made from the PPOPUP.DBF database and there are no restrictions on text entered here.

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.

Keep shared logon user account balances!

In the printer configuration, if Accounting=User account balances and Log File, account balances are maintained and enforced by Pcounter for **PrinterPopupUsers** in the same fashion as standard Windows user accounts. Use PAdmin (select PrinterPopupUsers) to maintain the shared logon user database. It allows adding, deleting, and changing entries in the list, as well as standard accounting procedures, print histories, and reports.

Using PPopup/PrinterPopupUsers with LDAP

In addition, the Pcounter PrinterPopupUsers functionality can be enhanced with an optional LDAP authentication and browsing DLL which is available at <http://www.pcounter.com/download.html>. This DLL is useful in situations where there is no local domain, and accounts are already defined on an external LDAP server.

Importing users

In PAdmin, select Database, Import. Comma delimited text files can be imported into the shared logon user database. Each record occupies a line in the file. The format of each line should be:

Username,Fullname,Password

Only the Username field is required - the others can be left blank. Records with a matching Username will not be overwritten.

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 \\DataServer\Pcounter\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 or less.

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 printer configuration.

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.

Maintaining database files

- 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.
- If 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.
- All databases are indexed in FoxPro compatible format.

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 **PPOPUP.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 **PPOPUP.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 **PPOPUP.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.

Auto client codes are stored in `\\DataServer\Pcounter\Data\DomainName_Autocodes.dbf`.

There may be situations where it would be advantageous for users to change their own Auto client codes on a periodic basis. It is possible for users to modify their own Auto client codes using PPOPUP by using the **/autocode=\\serverName** command-line option. PPOPUP reads its configuration from serverName, and loads the client code database if necessary. Using PPOPUP with this option only allows users to set their Auto client code, and **will not pop up** a window for any print jobs. Users can double-click on the PPOPUP icon to set their Auto client code.

The popup window shown with the **/autocode** option should be setup using Pcontrol (in the Pcounter server configuration) and is subject to the same features and restrictions as if it were appearing with each print job.

Typical users are not granted read or write permission to `\\DataServer\Pcounter\Data` by default if Pcontrol was used to create the PCOUNTER share. Users will need to have Read/Write permission to `DomainName_Autocodes.dbf` and `DomainName_Autocodes.cdx` in order to modify their own Auto client codes. Please do not grant ordinary users Read/Write permission to the entire folder or they will have access to the account balance databases and log files.

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.
- Limitations of the Windows spooler allow only times (not dates) when jobs can be scheduled.
- 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.

Pcounter Web Client

Pcounter Web Client is an HTTP CGI application which runs on any Windows web server. It duplicates the functionality of PPopup in any web browser from any platform, including Macintosh, Linux, UNIX, and of course Windows. Pcounter Web Client has been tested on IIS 4-6, and Apache 2.0.43. Other web servers should also work.

The purpose of Pcounter Web Client is to allow any user to authorize, authenticate, and/or apply client billing codes to print jobs without any need for additional client software. Users are shown all pending print jobs, which can be authorized with a single button click.

Installation in Internet Information Server

- **Copy WebClient.EXE** to an executable directory, such as **cgi-bin**.
- If an executable directory does not already exist, create a new directory on the web site and copy WebClient.EXE into it.
- Find the new directory in Microsoft Management Console, and open the Properties of the new directory.
- On the **Directory** tab, set **Execute Permissions** to **Scripts and Executables**. Read permission is not required.
- On the Directory (or File) Security tab, set the authentication permissions and IP address restrictions accordingly. Browsers other than Windows Internet Explorer may have problems with authentication methods other than Basic authentication. If Basic authentication is allowed, it may also be necessary to specify the default domain.
- If **Anonymous access** is allowed, then the account used for anonymous access must have at least **Print permission** to the printers being monitored. Otherwise no jobs will be displayed.
- Type **WebClient CONFIG** from a command prompt on the web server to setup the correct parameters.

Additional configuration information for IIS 6

CGI applications are disabled by default. It is necessary to configure WebClient.EXE as a CGI application.

- In the **Application Server management console**, find the web server computer, expand it, and choose **Web Service Extensions**.
- On the Action menu (or right-click), choose **Add a new Web service extension**.
- Set **Extension name** to WebClient.EXE or some other descriptive text.
- Add the full path to WebClient.EXE to the **Required files** list.
- Make sure that **Set extension status to Allowed** is checked/enabled.

Installation on Apache and others

- **Copy WebClient.EXE** to an executable directory, such as **cgi-bin**.
- Password protect the file or directory as needed.
- Type **WebClient CONFIG** from a command prompt on the web server to setup the correct parameters.

General Configuration Notes

- The web server must be running on the Pcounter print server.
- It is possible to have multiple Pcounter Web Client URLs, each serving a separate printer list and/or with a different configuration. Renamed copies of **WebClient.EXE** can be kept in the same **cgi-bin** directory without conflict, or multiple copies of WebClient.exe can be hosted in multiple directories. Configuration options for each URL are kept in an INI file with the same name as the associated EXE; for example, WebClient.EXE uses WebClient.INI, WebClient2.EXE uses WebClient2.INI, etc.
- Pcounter Web Client printers should be configured exactly as they would be for the Pcounter Popup. In the Pcounter printer configuration, **Enable Popup Window should be selected**, and jobs will automatically be SuperPaused. If the **Count jobs in advance** feature is selected, then print job page counts and costs will be shown in the Pcounter Web Client display.
- It is possible for Windows users to use PPopup, while non-Windows users use Pcounter Web Client, on the same printers at the same time.
- It is recommended that **non-Windows users print to the Windows server via LPR**, although Samba/SMB printing is also likely to work.
- Appletalk printing and **Services for Macintosh clients are not supported**.
- LPD services must be provided by Pcounter LPD or Microsoft's TCP/IP Print Server (LPDSVC) service. Third-party LPD servers generally will not work since the client IP address information is not preserved with the print job.
- The installed Pcounter Printer Control and Data Server services must be versions 2.10 or later.

Client Browser Notes and minimum recommended versions

- Javascript is required, cookies recommended.
- Internet Explorer 5.x (Windows, Macintosh)
- Netscape 6.x
- Mozilla 1.x
- Opera 7.x
- Safari (Beta 2-12-03)
- Konqueror 3.0.3-13 has display problems with client code lists. Later versions will benefit from a common code base with Apple Safari.

Access URL

- <http://webserver/cgi-bin/WebClient.exe>

Window Title

Text entered here will be shown on the title bar of the browser window.

Window Type

Generally these window types correspond with the Pcounter Popup equivalents. All window types except for PrinterPopupUsers require URL authentication for LPR clients to be identified properly.

- **Client Code List** - Users can choose from a pre-configured one-dimensional list of client codes.
- **Entry Form** - Users enter client codes into a form with optional validation.
- **Job Validation** - Domain users simply authorize which jobs should print. (Similar to Popup Window Type = Confirmation)
- **Matter Number List** - Users can choose from a pre-configured two-dimensional list of client codes.
- **Embedded Logon** - Similar to the Job Validation window type, except that the web page also includes an ID and password prompt for domain users, or users in the PrinterPopupUsers database. Web server authentication for page access is not necessary nor required. Since the connection is assumed to be anonymous, it is not possible to display the Username or Account Balance in messages. Unlike pages which require authentication, users must enter an ID and password each time.
- **Job ID** - 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.

Language

Pcounter Web Client supports the same languages as Pcounter Popup.

Data Server URL

(Client Code List and Matter Number List only.)

If the Pcounter Data Server computer is not the current Pcounter print server, then the Pcounter data server must be setup with its own web server and Pcounter Web Client URL, so that client codes can be retrieved.

Windows client setting

This setting determines how print jobs are located and displayed from Windows clients.

- **Match by workstation** - In some cases the Windows client IP address will need to be resolved to a NetBIOS machine name via DNS or WINS name resolution.
- **Match by username** - Requires authentication. All print jobs from the authenticated username are shown even if they are submitted from different workstations. In order to preserve workstation/job relationships, workstation logons must be unique and not shared.
- **Windows NT 4.0 Servers** - If Windows 9.x clients are printing to a Windows NT 4.0 server, **Match by username** will automatically be used even if **Match by workstation** is selected. This does not apply to Windows 2000/2003 servers, or Windows NT 4.0 (or later) clients printing to Windows NT 4.0 servers.
- **Terminal services clients** - Will automatically use **Match by username**, even if **Match by workstation** is selected. Terminal session logons should be unique and not shared.

Message Text

A custom message can optionally be shown above the browser print job display. Substitutions for Username (%U) and Account Balance (%B) are possible with all window types except for Embedded Logon and JobID. HTML tags can be inserted. Pcounter Web Client configuration will automatically convert line feeds to
 tags.

Printer list for URL

Adding specific Pcounter printers to this list can reduce overhead on busy servers. Otherwise all Pcounter printers will be checked if the list is empty.

Client code options

For more details please refer to documentation on Pcounter Popup.

- **Client code only from list** - 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** - users must select a subcode from the list, otherwise they can either select a code from the list or type in a code manually.
- **Remember previous selection** - requires cookies enabled. Otherwise all fields are cleared for each new window.
- **Allow subcode form** - the subcode field is available for users to type in any notes they please.
- **Allow non-billable jobs** - users can be allowed to specify that individual jobs will not be charged.
- **Prompt** - how to prompt the user, such as "Enter client code:".
- **Client code/subcode name** - terms used to describe codes, such as "PIN number" or "Project code".
- **Client code/subcode length** - maximum input length for codes.
- **Code validation** (Entry Form)
 - ◇ **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.

Embedded Logon Options

- **PrinterPopupUsers** - Users will be authenticated from the PrinterPopupUsers database.
- **Domain users** - Users will be authenticated from the domain. It is necessary for the print server to be a member of the domain in order to use this feature.

Job ID Options

- **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 password optional**
- **Job password required** - If used with Pcounter Station, then this password will be required in order to release the job for printing.

Troubleshooting

- Add the line **Debug=1** to the **[Settings]** section of Webclient.ini located in the same directory as Webclient.exe. Status messages will be shown either in the top message area or in a Javascript popup window. Remove this line when finished troubleshooting.
- If **Error 5** is shown, this means **Access Denied**. If IIS is being used with anonymous access allowed, ie. no authentication, this means that the account used for anonymous access requires at least **Print permission** to the printers being monitored.
- If no specific printers are specified in the configuration (which means that all Pcounter printers will be checked), any printers not shown in the debug message require at least Print permission for the anonymous access account as indicated above.