PaperCut *6.1*

Cut Paper… Cut Bandwidth… Cut Cost…

User Guide

PaperCut Quota 6.1 *– Print & Net Charging for Windows Networks*

PaperCut Quota is a print and Internet charging, quota and/or monitoring system for Windows networks. It was initially developed to meet the need in schools to minimize waste and promote the responsible use of IT resources. It also has numerous applications within the corporate environment where there is a need to assign costs to projects, departments, or just simply monitor usage.

A feature added to PaperCut in 2001 was Internet charging. This feature allows you to charge your users for Internet usage using the same user database as used for your printer charging/quota. With the introduction of integrated printing and Internet charging, PaperCut is the simplest way to take control of the costs associated with a typical Windows network. You may not need to "charge" your users, often just implementing a sensible quota or making users aware that they are being monitored is enough to reduce costs.

PaperCut Quota is a one-stop solution for implementing a user-pays system, quota restrictions, or silent logging for both internet and/or printing use.

The PaperCut software can by installed in the following combinations:
- ❑ Combined print and internet usage monitoring
- ❑ Print monitoring only
- ❑ Internet usage monitoring only

The installation and use of PaperCut will:
- ❑ Transfer accountability to users
- ❑ Creates responsibility and environmental awareness
- ❑ Reduces overall printing cost
- ❑ Reduces overall Internet usage costs
- ❑ Discourages overuse of the Internet

Features

- Differential print charging system allowing different costs for each printer
- Allows an appropriate cost to be set on Color Printers, different page sizes, etc.
- Works with common laser and inkjet printers
- Ability to detect and delete duplicate print jobs and filter documents by type, cost or size.
- Monitor users on both individual and group basis

- Allows you to monitor Internet usage and charge users either by amount of time used or data downloaded
- Charging internet use either as a cost per megabyte or cost per time
- Can automatically disable (bar) Internet and printer access for uses without sufficient credit or quota
- Easy, fast and simple administration
- Automatically schedule credit to users to encourage budgeting
- Advanced **Web Tools** interface provides user administration using a standard web browser
- Automatic user account creation, minimizing system maintenance
- Automatic synchronization with Active Directory user lists
- Synchronize with Active Directory Org Units and Nested Groups
- Wizard manages common installation onto chosen print & proxy server
- Integrates into Windows NT/Windows 2000 users and groups environment
- Detailed print job and Internet usage logging and audit
- Queries and customizable reports
- Microsoft Access database integration
- Remote administration via web browsers
- Upgradeable *Page Counting Machine* allowing future printer/hardware support

About This User Guide

The manual covers the use, administration and installation of **PaperCut**. The first section covers the basic account administration, and is appropriate to distribute to persons responsible for administering user accounts. The Setup section at the back half of the manual covers installation and configuration. It assumes the reader has Windows networking experience.

*** *For installation instructions, see the Section 7 onwards* ***

1. Navigating about PaperCut

The **PaperCut** Administration Console is divided up into six sections; Users, Groups, Charging, Options, Event Log, and About. Each section may be viewed by clicking on the appropriate icon on the navigation bar located on the left hand side.   The options available under each section are as follows:

Users

- View credit in each user's account
- View total pages printed by each user
- Assign or add funds to a user's account
- Select whether a user has the privilege to continue printing after exceeding their allocated funds
- View a users printing history

Groups

- Batch assign funds to members of a domain group
- Query information about group members, such as the number of pages printed.
- Set rules which govern the initial credit assigned to any new user added to the network in the future
- Schedule tasks to top-up user's accounts up at regular intervals

Charging

- Select the cost users will be charged to use printers.
- Select your internet charging method, based on either time or data usage
- Set the cost per page for the selected printers.
- Set filter rules and restrictions on selected printers.
- Set Internet charging costs, either cost per Megabyte or cost per time period.
- View the total number of pages printed on each printer.
- List recent print jobs and printing history
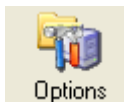
Options

- Set your printing and Internet charging configuration.
- Perform maintenance on the PaperCut user database.
- Set system defaults
- Customize "printing denied" *WinPopup* message

Event Log

- View detailed log of print jobs and Internet usage

- View detailed transaction logs to see a full audit trail credit changes
- View PaperCut application events and status
- Import usage logs from secondary servers
- Import, administer and track usage of TopUp cards
- Export detailed printing information to MS Access or MS Excel
- Run PaperCut's customizable reports

About

- Licensing information
- Version information
- Enter license/registration key

2. Basic Operations

Setting Printer Cost

To begin charging for jobs printed on a particular printer:

- Add the printer to the charging list.

- Set the cost per page for the printer.
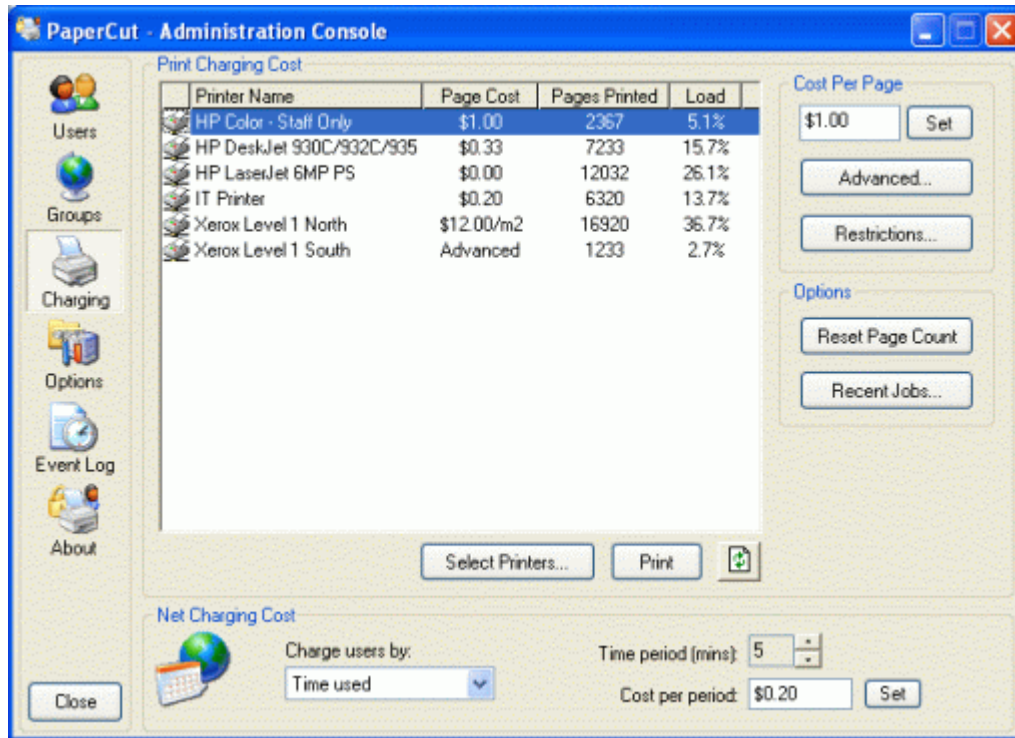
Figure 1: Charging section controls the cost of printing and internet.

To add a printer:

1. Click on the **Printers** icon on the left-hand side of the PaperCut
   Administration Console.

2. Click **Select Printers…** to display a list of printers available on the server.

3. In the **Available** column, select the printer(s) you wish to add.

4. Click the **Add** button followed by the **OK** button.

The printer will appear in the charging list with a cost of $0.00 per page printed. This cost
should be changed to a more appropriate value.

To set the cost per page:

1. Select the printer in the charging list. The printer name will be displayed in the top right-hand corner.
2. Edit the cost in the **cost per page** edit box.
3. Click the **Set** button or press Enter to apply the change.

Tip: If you would like to track printing on a printer, but don't wish to charge users, add the printer to the charging list and leave its cost at zero.

Assigning Funds to a User

The funds in a user's account can be changed with any one of the following methods:

- Credit can be set to any value
- Funds can be added with the Quick Add buttons.
- Any value of credit can be added to the funds currently in the users account.
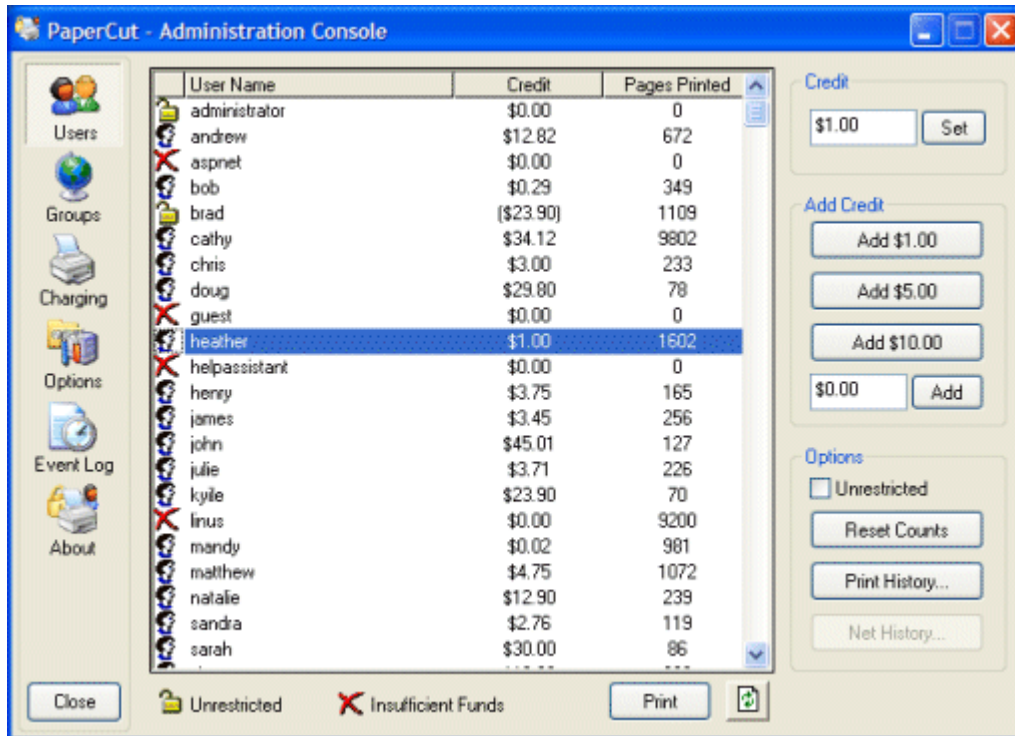
Figure 2: The user section lists users and their account balance

To set the funds in a users account to $50.00:

1. Select the user's **logon name** in the user list. The user's name should be displayed in the top right-hand corner.
2. Click in the **credit** box and change the value to 50 .
3. Click the **Set** button or press Enter to apply the change.

To add $10.00 using the Quick Add buttons:

1. Select the user's logon name in the user list. The user's name should be displayed in the top right-hand corner.
2. Click on the **$10.00** Quick Add button.

To add $7.20 to a users account:

1. Select the user's logon name in the user list. The user's name should be displayed in the top right-hand corner.
2. Click in the edit box immediately bellow the Quick Add buttons, and change the value to 7.20 .
3. Click the **Add** button or simply press *Enter*.

Setting User Privileges

When users attempt to print documents, PaperCut determines if the user has sufficient funds. If the cost of printing the document is higher than the credit in their account, printing will be denied. In some circumstances you may wish to allow users to continue printing, despite having insufficient credit. Giving a user **Unrestricted** privilege will allow the account to be "overdrawn".

To set a user to Unrestricted:

1. Select the user's logon name in the user list. The user's name should be displayed in the top right-hand corner.
2. Check the **Unrestricted** option located bellow the Quick Add buttons.
3. The user's icon in the user list will change to an unlocked padlock.

Viewing a User's Print, Internet Use & Transaction History

PaperCut maintains a detailed audit of each user's print and internet activity, and a log of all transactions the affect a user's credit. All activity is logged in the PaperCut event log. Print job information can be viewed in the Event Log section. For convenience, a user's print, net and history can also be accessed via the Users section.
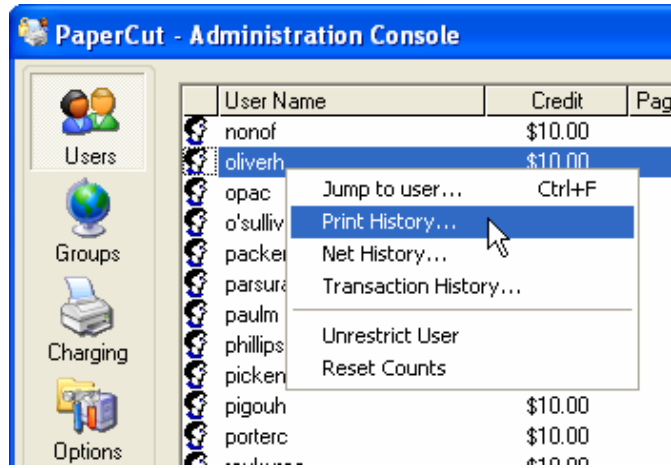
Figure 3: Right-click options on the user administration screen
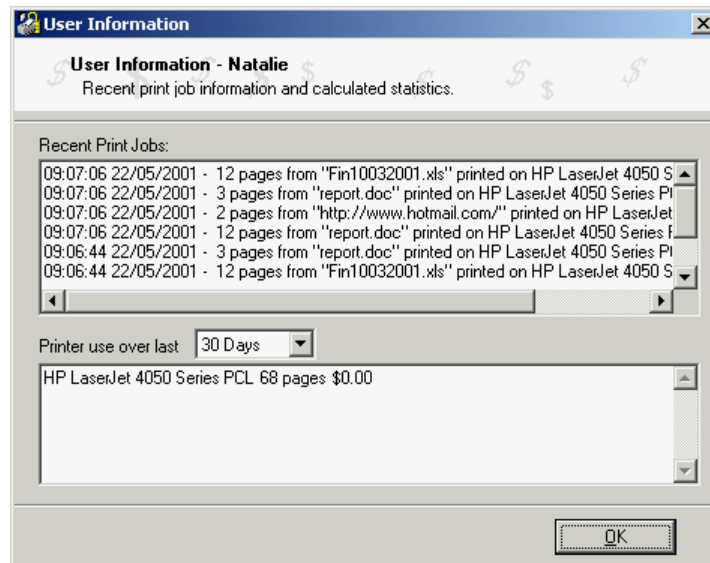
Figure 4: Click Print History to view a user's recent print jobs

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To view a user's print history:

1. Select the user's logon name in the user list. The user's name should be displayed in the top right-hand corner.
2. Click the **Print History…** button. The *User Information* dialog box will appear.

To view a user's internet history:

1. Select the user's logon name in the user list. The user's name should be displayed in the top right-hand corner.
2. Click the **Net History…** button. The *User Information* dialog box will appear.

To view recent print jobs printed on a particular printer:

1. Select the **Charging** section by clicking on the printer icon.

2. Select the appropriate printer from the printers list.

3. Click the **Recent Jobs…** button. The *Recent Print Jobs* dialog box will appear.

3. Advanced Options

Charging different amounts for page size, color and duplex documents

PaperCut has the ability to set different costs for documents printed on different paper sizes, reduced cost for grayscale documents, and reduced costs for using duplex (double side printing).

The cost per page for a given document is determined by the PaperCut **Job Attribute Detector** (jad.dll). The JAD will analyze each print job and determine the cost as defined by the advanced printer charging rules.

Accessing the advanced print charging rules:
1. Select the **Charging** section by clicking on the printer icon.
2. Select the appropriate printer from the printers list.
3. Click the **Advanced…** button. The *Advanced Printer Options* dialog box will appear.

> *NOTE*: *There is an Advanced Printer Options dialog for each printer in the charging list.*

By default, the advanced options are disabled for each printer. The advanced options should only be enabled for printers that support one of: duplex printing, different page size trays, or color.

There are three different ways of charging based on page size, duplex and color, which are tailored to different scenarios:

1. **Page size category charging** – simple charging for printers with multiple paper trays
2. **Page area charging** – simple charging for printers and plotters with multiple paper trays
3. **Charging by specific page sizes** (grayscale and color), with a default cost set at a flat rate, or by page area – **the most powerful method suitable for design, architecture, engineering firms with advanced printers and plotters**

Using the simplest charging method suitable for the situation is recommended. Take the time to print a test document to test each scenario and ensure the charging has applied as expected.

Page Size Category Charging

A practical example:

> I have a color printer that supports A3/A4 printing and duplex. I would like to define rules to:

- Charge $1.00 per page for A4 (standard size) color printing.
- Charge $0.40 per page if the users select grayscale (black & white) – a $0.60 discount for grayscale
- Charge an extra $0.80 if they use large A3 paper
- Offer a 50% discount for duplex to encourage double sided printing.

To accomplish this complex set of charging rules, the user should setup the Advanced charging options for the particular printer as defined in the screenshot below:
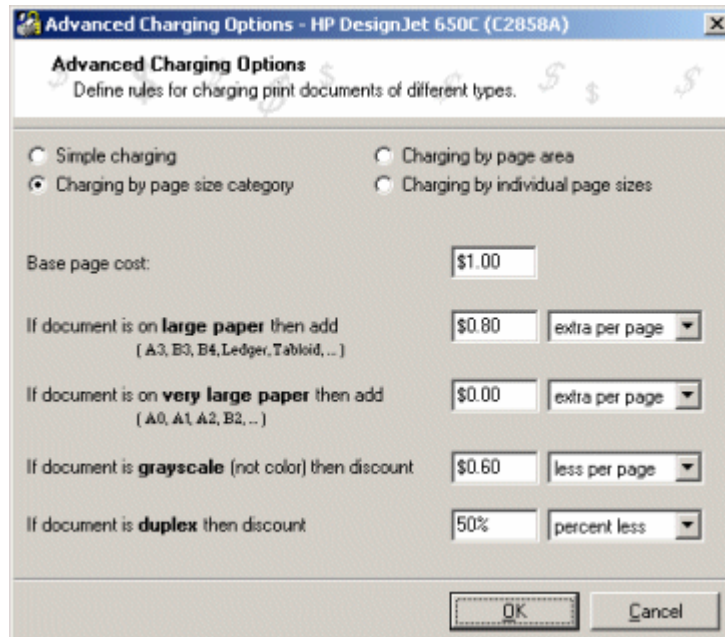
Figure 5: *Advanced charging screen allows fine grained cost configuration*

Note that in this example, the user's printer does not support very large page size, so this option is left at the default "zero".

The PaperCut *Advanced Printer Options* offers a very powerful rule set to define a fair page cost. Rules can be defined using fixed markups or discounts, or percentage based modifications. The above example uses a mixture of fixed and percentage based modification of cost and should be used as a guide for setting up appropriate cost.

Attribute	Applies To
Grayscale	Documents printed with the "grayscale" or "black & white" options selected from the printer properties dialog box.
Standard Page Size	A4, A5, A6, A7, B5, Letter, Legal, Executive, Foolscap, Envelopes
Large Page	A3, B3, B4, Ledger, Tabloid, etc.
Very Large Page	A0, A1, A2, B2, etc
Duplex	Documents printed with the "duplex" or "double sided" options selected from the printer properties dialog box.

Page Area Charging

A practical example:

I have a color printer or plotter that supports a range of page sizes. I would like to define rules to:

- Charge $10.00 per square metre of page size for color printing.
- Charge $4.00 per square metre of page size for grayscale
- The printer does not support duplex, so the duplex discount is set to 0%

To accomplish this complex set of charging rules, the user should setup the Advanced charging options for the particular printer as defined in the screenshot below:
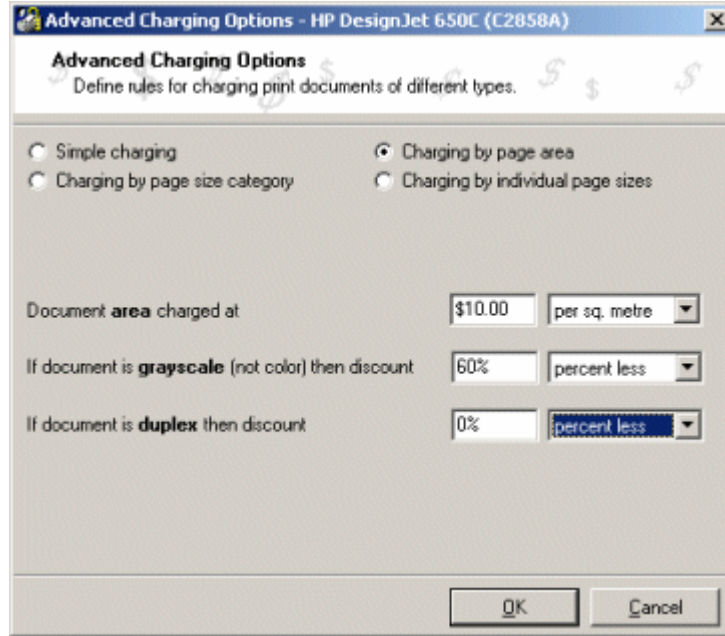
Figure 6:Advanced charging by page area

Note that in this example, the user's printer does not support duplex, so this option is left at the default "zero".

Charging by specific page sizes (grayscale and color)

This method is most suitable for organizations with advanced printers offering a variety of page sizes such as printers used at design, architecture and engineering firms.

A practical example:

I have a color plotter that supports a variety of page sizes. I would like to define rules to:

- Charge a default rate of $10.00 per square metre of page size for color printing
- Charge a default rate of $4.00 per square metre of page size for grayscale printing
- Override the default rates for grayscale and color for A2, A3 and A4 printing, setting the grayscale and color costs for each size explicitly
- The printer does not support duplex, so the duplex discount is set to 0%

To accomplish this complex set of charging rules, the user should setup the Advanced charging options for the particular printer as defined in the screenshot below:
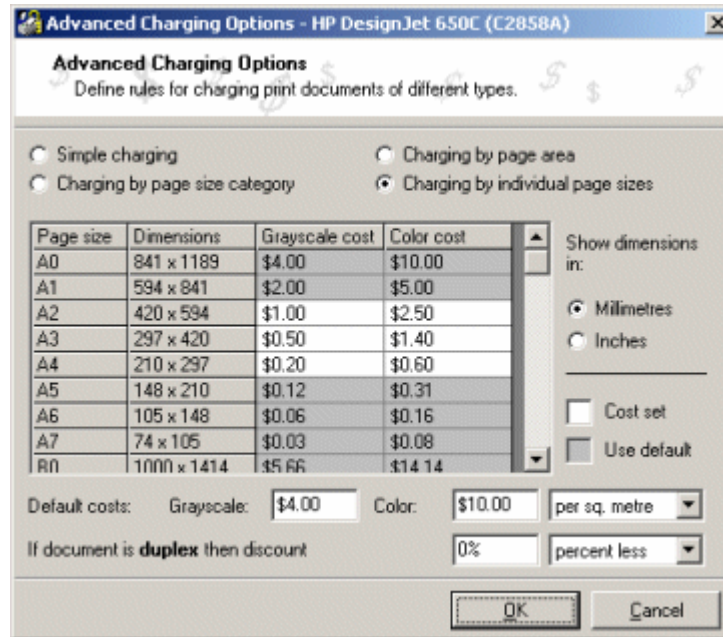
Figure 7: Advanced Charging by individual pages sizes

Note: Once the default costs are assigned, they will appear in the grid cells with a gray background. To override any of the default prices, simply click on the appropriate grid, and type in the overriding cost. These costs will be shown with a white background, as shown above.

Applying filter rules or restrictions on print queues

PaperCut offers advanced filter options to provide network administrators with the ability to filter, or restrict print jobs, on a per printer basis. Options available include:

- Detect and delete duplicate print jobs

- Define the maximum cost of a single print job

- Define the maximum number of pages allowed in a single print job

- Filter documents based on the file extension or name

- Allow only selected paper sizes

- Set a print to only allow color or black and white documents

Each printer has its own set of restrictions. The rules can either apply to all users or "restricted" users only. These settings are access by selecting the appropriate printer in the charging list and clicking the *Restrictions…* button.
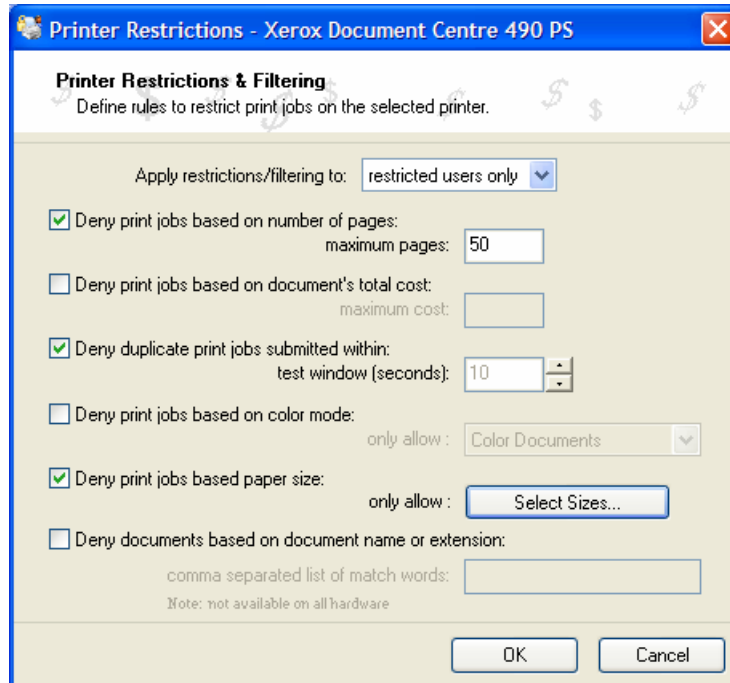
Figure 8: *Printer restrictions allows you to deny various types of printer jobs*

The restrictions screen with duplicate detection enabled with a 10 second window,
and a maximum page count of 50 pages per job.

The printer restrictions provide Network Administrators with advanced control over printer usage. Some common examples include:

Reduce printer jams

Many printers expect print jobs to be on single size of paper, or maybe two sizes if the printer has multiple paper trays. A non-standard size will cause the printer to enter a "manual load" state causing the queue to halt. PaperCut *Restrictions…* section allows Administrators select the **allowed** sizes. Non-standard sizes are automatically deleted before they're sent to the printer. It's an effective way of reducing one of the most common causes of queue jams.
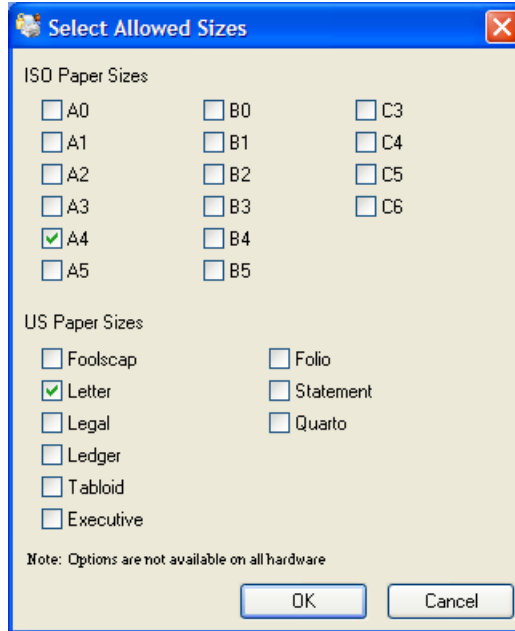
Figure 9: *Restrict the page sizes that are allowed to be printed*

Allowed sizes are A4 and Letter only.

Controlling documents on slow Inkjets

Inkjet printers have very low throughput rates. A large color document can hold up a queue preventing other users from getting their "fair share" of print time. By setting an upper page count via the printer's *Restrictions…* section, network administrators can prevent large print jobs, forcing uses to split up large documents allow other uses access to the printer.

Automatically deleting duplicate jobs

PaperCut can also monitor the print queues and automatically delete duplicate print jobs. This option is useful on networks with novice users. New users with often "double click" an application's printer icon causing two identical print jobs to be sent to the queue wasting paper and their print quota. Network administrators can enable duplicate job detection via the *Restrictions…* section. Duplicate jobs will automatically be removed from the queue. The user will not be charged for the job and be warned via a popup message.

> ***Note:*** *This option can affect multiple prints from Microsoft Excel and some other applications. Users wishing to print multiple prints from Excel may need to reprint the document 30 seconds apart.*

Force sensible use

Restrictions can be set to define a maximum cost per job. This will prevent users from "accidentally" spend all their credit in one print job.

Automatically delete documents based on file extension or name

There are many reasons why users should not print certain files. For example, maybe a report from the accounting application consists of 400 pages. Users may not be aware of this and "accidentally" print the report expecting only a few pages. PaperCut can be configured to match this document via its name and automatically deleted it from the queue. Use the Restrictions… keyword filter to implement this functionality. Additionally it's also possible to filter documents based on file extension by entering a keyword like ".htm" or ".pdf".

> *Note: This is not a security option. It is easy to circumvent the filter by simply renaming the document!*

Control who can print in color (Advanced)

By combining PaperCut's ability to restrict color printing (allow only grayscale), and standard Windows sharing permissions, it's possible to control which users have access to color printing.

To implement:

1. On the print server, **install** the drivers for the printer twice. Call one printer *Grayscale Only* and the other *Color*. You will now have two printer icons (logical printers) each connected to the same physical printer.
2. **Share** the printers as normal
3. Set Windows **access permissions** on each printer as required. Uses who require color access should be able to print to the color printer. Other uses should only be provided access to the "black and white" only printer.
4. **Add** the printers to PaperCut and define appropriate costs
5. Select **Restriction…** for grayscale only printer. Ensure that restrictions only allow black and white (grayscale) printing.

Refunding failed print jobs

It is inevitable that some print jobs will jam or fail. In a charging or quota enforced environment users may demand a full or partial refund. PaperCut includes a number of features to help automate and manage the refund process. These include:

- Logging of cancelled print jobs.
- One-click refund action - quickly refund a print job with a single click.

- Simple refund process via the PaperCut *Web Tools* interface.
- Automatic refunding of cancelled jobs that have not yet started printing. No administrator action required.
- Audit log of all refund actions.
- *Web Tools Quick Report* to conveniently locate cancelled and partially print jobs to apply manual refunds (not supported with all printers)

A user is *charged* at the moment their print job completes transfer to the print server (finishes spooling). The job will then sit in the print queue until the printer is available. By default, if a job is cancelled or deleted from the queue *before* it starts printing, the user is automatically refunded the full amount. This may happen if a previous job has jammed the queue and the administrator needs to purge all jobs.   For security reasons a user is <u>not</u> refunded if the job is cancelled or deleted *during* printing. Due to buffering in modern printers, in most cases it is not possible to determine how many pages have physically printed at the time the job was cancelled. Hence jobs that have started to print are never refunded. Administrators should manually refund failed or partially printed jobs on a case-by-case basis, making use PaperCut's quick refund operation to streamline the process.

Partially printed or failed jobs are highlighted in the PaperCut print log. In the PaperCut Application Event log these jobs are marked with a yellow background. In the web tools interface, these jobs are marked in **bold**. This visual marking allows administrators to quickly locate candidates for refund.

Example:
Jack is a network administrator at Northern High School. A teacher reports a paper jam in the library printer. Jack brings up the print queue, cancels all pending jobs, and then attends to the jam. Two documents were cancelled off the queue. Jane's document was second in the queue and had not started printing. PaperCut has automatically refunded Jane. Kelly's 10-page document jammed half way through. Jack decides to issue Kelly with a full refund. He brings up the PaperCut Web Tools interface, locates the job via Kelly's recent print jobs report and clicks the Refund link.

To refund a print job in the PaperCut Administration Console:
1. Open the PaperCut Administration Console and navigate to the **Event Log** section.
2. **Locate** the job requiring refund. Use the time, username, and printer name to assist with locating the correct job.
3. Right-click on the log entry and select **Refund…**
4. Click **Yes** to confirm the refund.

To refund a print job in the PaperCut Web Tools interface:

1. Open the browser to the PaperCut Web Tools interface. Click on the Admin section.
2. **Locate** the job requiring refund. Options for locating the required job include:
    a. Via the recent print jobs link
    b. Via the user's recent print jobs link
    c. Via an appropriate *Quick Reports* link or an *Ad-Hoc Report*.
3. Click the *Refund* hyperlink and click **Yes** to confirm the refund.
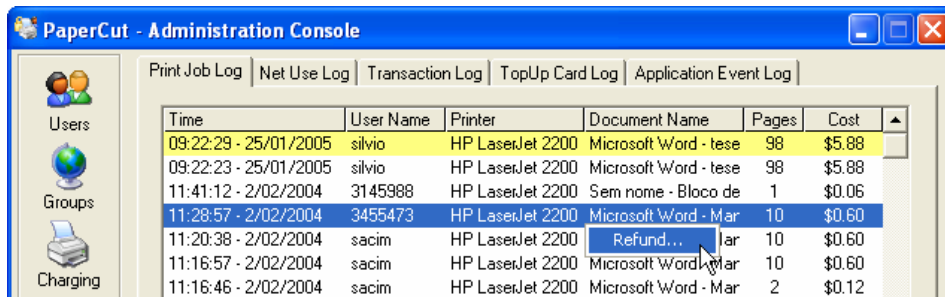
Figure 10: *Right-click on a print job to issue a refund. Jobs cancelled during printing (and hence not refunded) are highlighted with a yellow background.*

The automatic refunding and logging of cancelled print jobs can be disabled by and administrator via the check box located under *Options->Print Charging Options*. This option is enabled (turned on) by default.

Providing uses with an "overdraft"

An overdraft allows restricted users to overdraw their account to a defined limit. PaperCut allows a global overdraft limit to be defined and applied to all restricted users.

To defined the overdraft limit:

1. Select the *Options* section by clicking on the **Options** icon on the sidebar.
2. Click on the **Print Charging Option** tab
3. Modify the *Overdraft* value to the appropriate overdraft limit and click the *Set* button.

Setting the initial credit assigned to new users

It is inevitable that new users will be added to your network in the future. To streamline account setup, PaperCut offers the option of having new users automatically assigned an initial starting credit the first time they print. This initial credit can be varied depending on the group(s) they

belong too. For example, you may wish to automatically assign Managers/Staff $100, but only $10.00 to all other users.

The initial credit assigned to a user depends on the local and global groups they belong too. To set the initial credit given to members of a particular group:

- Add the group to the Groups List
- Set the initial credit to the amount you wish to automatically assign to new users belonging to this group
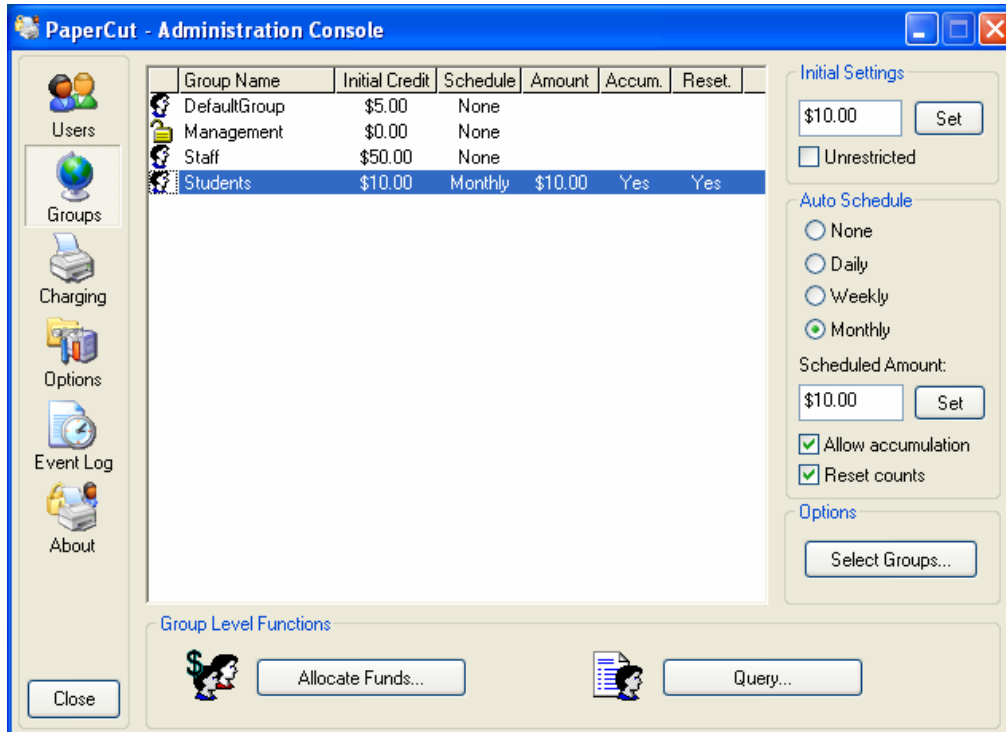
***Figure 11:** The Groups section allows group level administration*

To add the group to group to the Groups List:

1. Click on the **Groups** icon on the left-hand side of the **PaperCut** Administration Console.
2. Click **Select Groups …** to display a list of Global and Local Groups.
3. In the **Available** column, select the group you wish to add.
4. Click the **Add** button followed by **OK**.

To set the initial credit:

1. Select the group in the Groups List. The group name will be displayed in the top right-hand corner.
2. Edit the credit shown in the **Initial Credit** edit box.

3. Click the **Set** button or press **Enter** to apply.
4. If you wish for new users belonging to this group to also have "Unrestricted" privileges, check the **Unrestricted** option.

If a new user belongs to two or more groups listed in the Groups List, they will be assigned the highest initial credit. If any one of the groups has *Unrestricted* privilege, the user will inherit unrestricted access. Any initial settings can be manual overridden in the user section at any time.

If a new user does not belong to any of the groups listed in the Groups Section, they will be assigned the initial credit given to the built-in **DefaultGroup**.

Credit Scheduling and Quota Allocation

The automatic scheduling of credit/quota can be a useful mechanism to encourage "budgeting" or quota use to a reasonable limit. **PaperCut** can automatically add credit to members of a Domain group on a Daily, Weekly or Monthly schedule. To configure scheduling:

- Add the required group to the Groups List, if not already listed.
- Set the Schedule Period to the desired interval.
- Change the Scheduled Credit to the amount of credit to be automatically added to group members.

To set the Schedule Period:

1. Click on the **Groups** icon on the left-hand side of the **PaperCut** Administration Console.
2. Select the required local or global group in the Groups List. (If the group is not listed, add the group under **Select Groups …**)
3. Set the schedule period by clicking on the appropriate daily, weekly or monthly option.

To set the Scheduled Credit:

1. Click on the **Groups** icon on the left-hand side of the **PaperCut** Administration Console.
2. Select the required local or global group in the Groups List.
3. In the **Scheduled Credit** edit box, set the amount of credit to be added each interval.

Credit will be assigned to group members at 12:00am (midnight) on the day of the schedule, or when the print server is first turned on during that day. Weekly schedules are rolled over Sunday morning, and Monthly schedules are rolled over on the first day of the new month. Users should be made aware of the policy so they can budget their use accordingly.

When a scheduled allocation is completed successfully, a message will appear in *the PaperCut Application Event Log.*

Advanced Credit Scheduling

PaperCut version 4 introduced a new more flexible automatic credit scheduling system. It is now possible to control how, and if, the schedule credit is assigned. It is often desirable for uses to get *set* to a threshold value rather than had this value *added* to their account. This prevents users from "banking up" or accumulating their allocation. By turning off the **Allow Accumulation** setting on the assignment rule, users will be allocated credit according to the following rules:

- If the user's current balance is below the schedule credit value, they will be topped up to the scheduled value.
- If the user's credit is above the scheduled credit value, no credit will be issued to the account and the current balance will remain.

This arrangement has an advantage over the more traditional "set user to X" arrangement. A user may require a larger balance in their account for a particular purpose. The network administrator may add additional money to that user to take them above the usual quota, or the user may pay for additional quota. This above strategy ensures that this addition amount is not taken away from them when the auto-scheduling is run.

Note: The "allow accumulation" settings is a per group option. It's possible to allow users in one group to accumulate their allocation while not offering this to others.

Examples:
Fast River High School provides their students with $5.00 credit a week. This is setup by setting a $5.00 weekly assignment to the "Students" group under PaperCut's Groups section. The allow accumulation is turned *off* to prevent the students from banking up their allowance. On Sunday night, the following happens

- John has not printed at all during the week. This account is at $5.00. He will contain to have $5.00 in his account on Monday
- Mary has $2.35 in her account. On Monday she will have $5.00
- Sarah has an important project and will be using lots of printing and internet over the next week. Her teacher has set hour account to $10.00. On Monday she will still have $10.00 in her account.

Group Level Functions

In many network environments, working at group level is the most convenient method of administering user accounts. PaperCut integrates into the Windows Domain Users and Groups environment, and allows the manipulation of user accounts on a group level. For example you may wish to reset all users who belong to a departmental group, back to an initial starting value every quarter. This operation, along with basic group querying can be performed with the *PaperCut Group Level Functions.* These options are found under the Groups section.

Allocate Funds to Group Members

With **Allocate Funds**, the following operations may be applied to all primary members of a specified group:

- Set the credit to a specified value.
- Add credit to user's accounts.
- Change all group members' privilege to Restricted or Unrestricted.
- Reset counts such as printing and/or internet use.
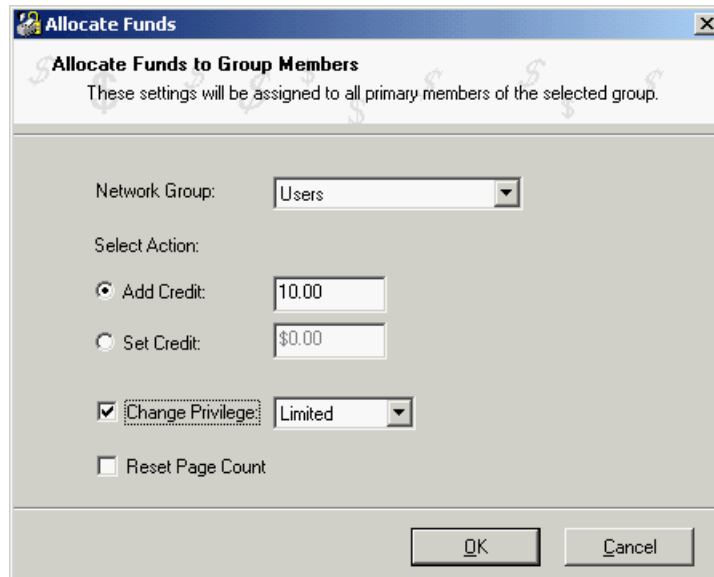
Figure 12: The Allocate Funds allows credit to be assigned to group members

To set all members of the "Management" group to $50 and give these users "Unrestricted" privilege:

1. Click on the **Groups** icon on the left-hand side of the **PaperCut** Administration Console.
2. Click **Allocate Funds…**
3. Select the "Management" group in the group selection box.
4. Select the **Set Credit** option and change the value to 50.00

5. Select **Change Privilege**, and ensure **Unrestricted** is selected.

6. Click the **OK** button to apply the selection to the members of the Management group. The changes can be seen in the user list, under the Users section.

Group Query

The **Query** option is quick way to determining total page count and other usage information specific to any Domain group.
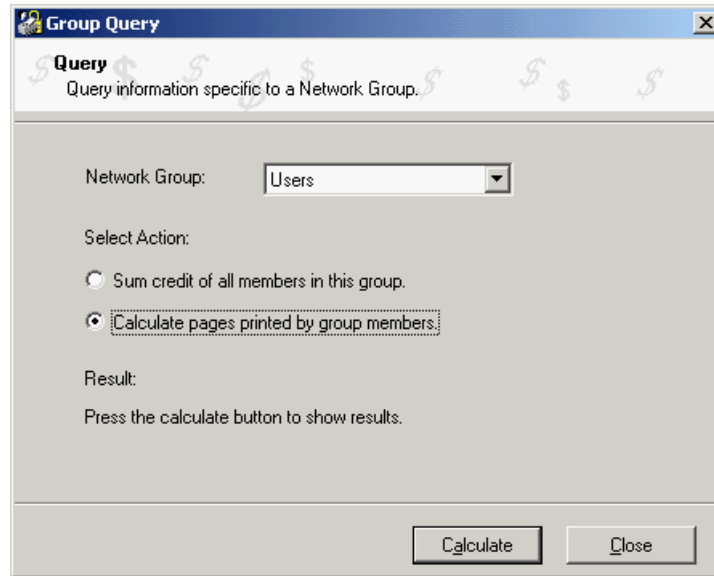
Figure 13: Query usage information at a group level

To query the number of pages printed by members of the "Engineering" group:

1. Click on the **Groups** icon on the left-hand side of the *PaperCut* Administration Console.

2. Click **Query…**

3. Select the "Engineering" group in the group selection box.

4. Select the **Sum Pages** option.

5. Click the **Calculate** button to display the number of pages printed by "Engineering".

TIP: Are you after advanced information on groups, users and their usage? Try PaperCut's Microsoft Access reports!

Database Maintenance

The PaperCut database stores all the user account information. If a user account is removed from the network, the username will continue to list in the PaperCut database. A database **Tune**

Up will remove these deleted names form the PaperCut database and bring PaperCut in sync with the Domain or Active Directory user list. The **Tune Up** option will also:

- Add any new network users not yet listed
- Optimize the database
- Create a backup and place it in the ~PaperCut\Backup folder.

Although new users will be added automatically the first time they print, we recommended using the **Tune Up** after added a number of new uses such as the start of a new school term. This will ensure the database contains all users and will optimize the database for performance. New users will be added using the *Initial Credit* rules set under the Groups section. We encourage Administrator to "Tune Up" every two to three months for backup and optimization purposes.
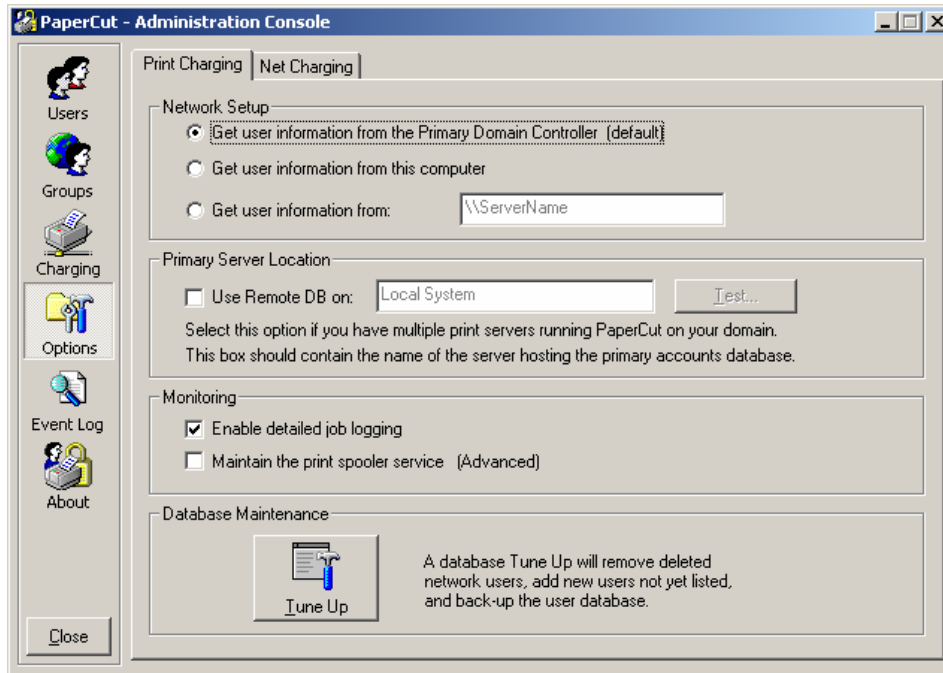
Figure 14: Use Tune Up in the Options section to clean and optimize the database.

TIP: Would you like to schedule the addition of new users automatically? PaperCut includes a batch file script that system administrators can use to automate the process. See the System Administration information section later in this user guide.

Internet Charging Options

Most of the settings on the Internet Charging options screen were configurable when you first installed PaperCut, however others only appear on this screen. You can use this screen to fix problems, change your configuration, or test the current settings.

The remainder of this section will describe each of the settings on this screen (shown below).
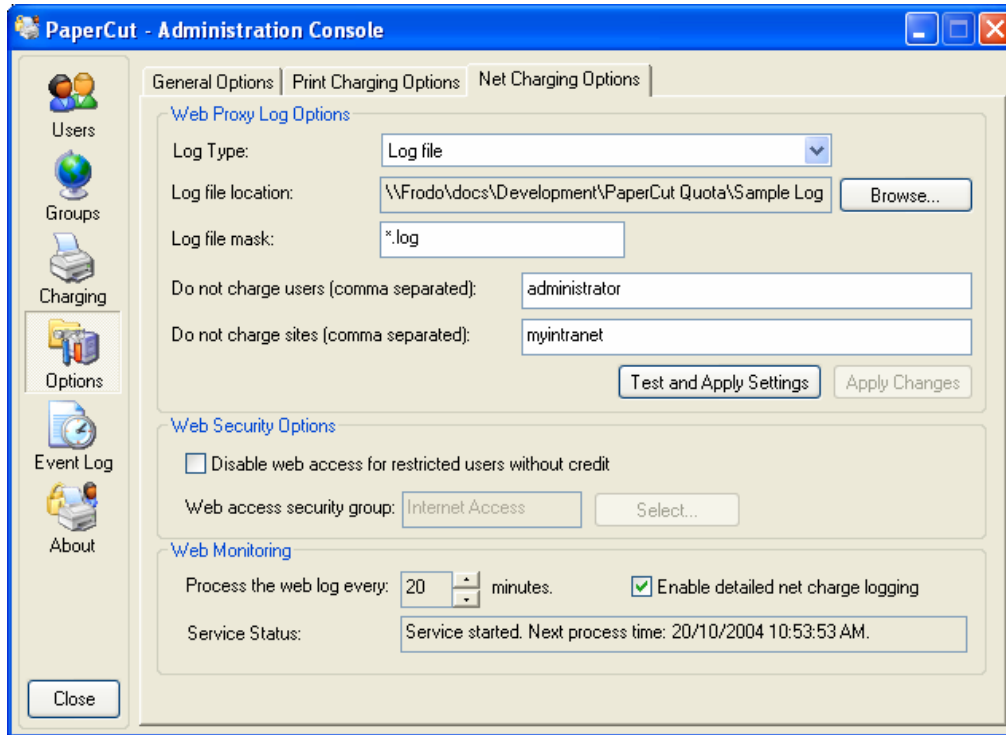
Figure 15: *Internet Charging options screen running on Windows XP.*

Log Type

Allows you to choose how your proxy logs internet access:

- Log File – supported by all proxy servers
- MS ISA SQL Logging

Log File - Log File Location

This setting should be set to the directory that contains your proxy server's log files.

Proxy Server Type	Default log folder path
Microsoft ISA Server	C:\Program Files\Microsoft ISA Server\ISALogs
Microsoft Proxy Server	C:\WinNT\System32\msplogs
Other proxies	See proxy server documentation for details

If you are not installing Internet Charging on a proxy server itself then select the network share that contains your proxy server's log files. Make sure you use the \\servname\path notation because windows services cannot use mapped drives like "S:". You can do this by browsing to your share via "My Network Places->Entire Network-> …" (if on a Windows NT machine browse through "Network Neighborhood").

NOTE: You must apply the settings to make them have effect.

Log File - Log File mask

Proxy servers often have different types of log files in addition to the web proxy log file that PaperCut requires. The log file mask is the filter PaperCut uses to find the web proxy log files in the proxy's log file directory.

The default mask "W*.log" should work for both Microsoft ISA Server and Proxy Server.

SQL Logging – Connection String

Press the "Build" button to help modify the connection details.

The required connection details are as follows:

- **Server** – The machine hosting the SQL Server
- **Database Name** – The database containing the log table
- **Use Integrated Security** – Select this if your SQL server uses Windows security for login authentication. Leave unchecked if using SQL authentication (i.e. uses username/password)

- **Username** – The SQL user to connect to database
- **Password** – The SQL user's password to connect to the database.

> **NOTE:** When using Integrated Security, PaperCut will connect to the database as the user that the PaperCut service is configured to run as. So ensure that your SQL server is configured to allow this user to connect to the proxy log database.
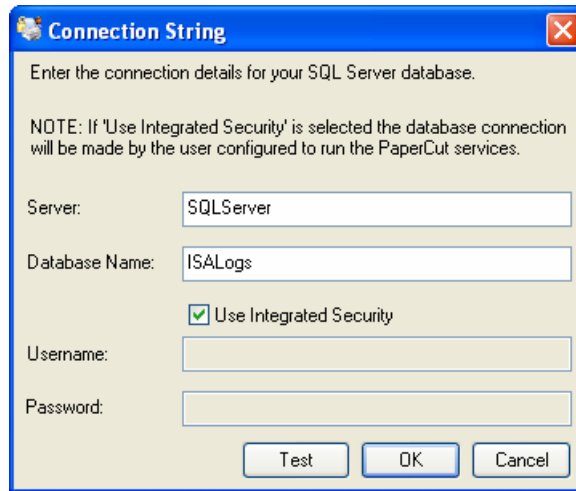
Figure 16: Configuring the SQL connection details

Once the connection details are completed, enter the database table that stores the proxy logs. By default the table name is `WebProxyLog`.

You must apply the settings to make them have effect.

Do not charge Users (Advanced)

You can enter a comma-separated list of users that should be ignored when processing the proxy server log files.

If there are additional users that you want to ignore add them to this list. Make sure that you comma-separate the users you want to ignore.

You must apply the settings to make them have effect.

Do not charge Sites (Advanced)

You can enter a comma-separated list of sites (domain names) that should be ignored when processing the proxy server log files. For example if there are some sites that you do not want to

charge your user for viewing them (e.g. your intranet, libraries, etc) you can enter them in the ignored domains list.

You must apply the settings to make them have effect.

Testing Settings

Once the proxy log file location, file mask or ignored users is changed, the changed settings can be tested by pressing the "Test and Apply Settings" button. PaperCut will perform the following to ensure the settings are correct:

- Finds the latest log file in the given directory matching the file mask
- If no file is found then your settings may be incorrect.
- If a log file is found PaperCut will tell you which file was found and asks whether you want to test processing of the file. It is recommended that you say yes. NOTE: This test does not update the user database or deduct credit from users account.
- Displays a summary of the Internet usage that were found in the given log file.

Figure 17: Example test results of processing proxy logs

Disable Web access for Users without Credit

PaperCut can disable Internet access to restricted users without credit when this checkbox is ticked. PaperCut does this by adding or removing users from the Internet access security group you have configured your proxy server to use (See "Web Access Security Group" below).

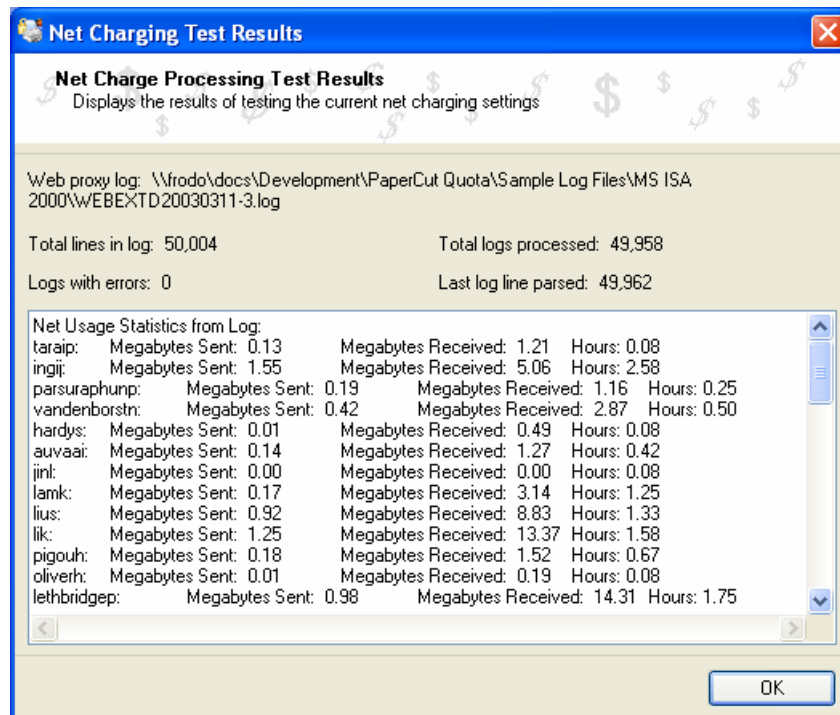Every time PaperCut processes the Internet log files it will update the web access for users. If users have run out of credit, they will be removed from the Internet access security group configured (see below). If users have credit remaining then they will be added to the Internet access security group.

Web Access Security Group

If you have chosen to "Disable Web access for Users without Credit" then you must configure your web proxy server to only allow users Internet access if they belong to a particular security group (e.g. "Internet Users"). You should select this security group by clicking the "Select…" button. You must configure this group to allow internet access within your proxy server.

> *NOTE:* Be careful to select the correct group, because PaperCut will modify group membership based on users' credit balance. PaperCut will not allow a built-in group like "Administrators", "Domain Admins", "Domain Users", etc to be selected.

Web monitoring Processing Interval

This setting modifies how often PaperCut processes the proxy server log files. By default it is set to every 20 minutes (ensuring a average update delay of 10 minutes).

Specifying a shorter interval will mean that user's credit will update closer to real-time, and therefore they will be denied internet access faster if they run our of credit. However this needs to be balanced against a processing too often because it may cause some additional server and network load.

Enable Detailed Net Logging

If detailed net logging is enabled, PaperCut will save a daily summary of each user's Internet usage. The detailed logs are saved in the database C:\Program Files\PaperCut\Logs\NetUseLog.mdb. If you open this database in MS Access 2000 you can run some example reports, or create your own custom reports.

Disable detailed logging if this database grows too large and you do not want to periodically clear the log.

Setting Net Charging Costs

The first decision to make when defining Net Charging costs is to determine which charge method to use. PaperCut offers two charging models:

- Time based – charges users based on the length of time using the internet. This is useful in organizations where computing resources are scarce or you want to discourage extended internet usage
- Data based – charges based on the amount of data the user has downloaded or uploaded. This is useful in organizations where bandwidth is expensive, or you are charged by the megabyte by the service provider.

Within the "Charging" section of the PaperCut Admin console you can choose between these charging methods as show in Figure 18 below.
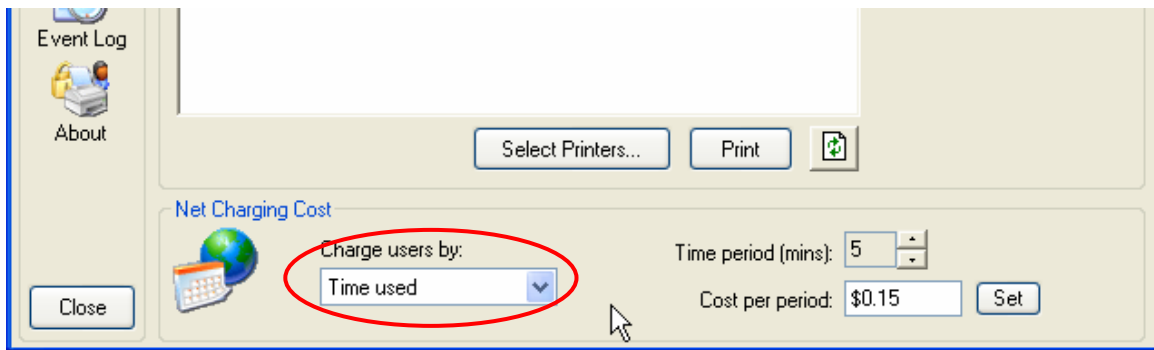
Figure 18: Selecting the time based net charging method

Each of the charging methods is discussed in further detail in the sections below.

Time Based Charging

When Time based charging is selected the following options are provided:

- **Time period (mins)** – defines the unit of time that users are charged for (Defaults to 5 minutes)
- **Cost per period** – defined the cost for each time period used

Users are charged based on blocks of time used. Users are always charged for using the full time period when they use the Internet within that period.

The diagram below represents the Internet usage of a single user. The black boxes show the 5 minute time periods, and the red dotted lines represents each time that the user views a web page, or downloads a file.

| 3:30pm | 3:35pm | 3:40pm | 3:45pm | 3:50pm | 3:55pm | 4:00pm |
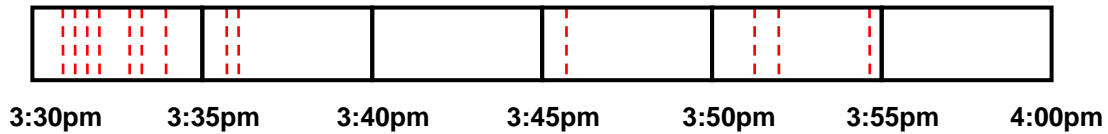
Figure 19: Example of how internet charging calculates time used

In this example the user will be charged for 4 time periods of use, and they will be debited 4 multiplied by the cost per time period. The user is charged for the full time period even if they only hit one web page during the period (as is shown above between 3:45pm and 3:50pm).

Data Based Charging

When data based charging is selected, the net charging options change to those shown below
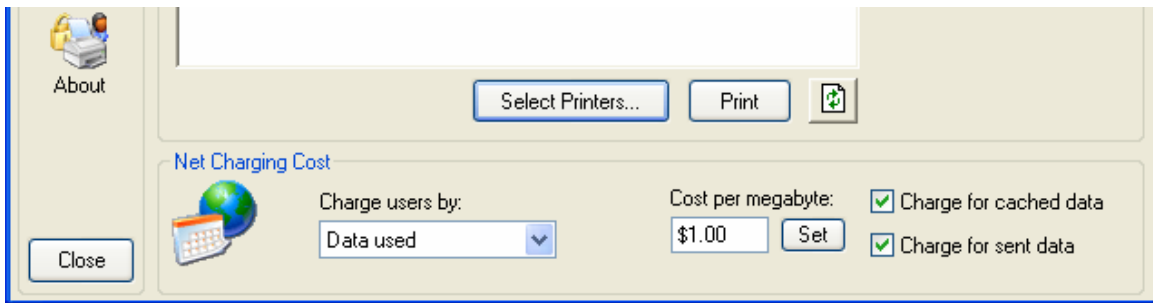
Figure 20: Selecting the data based net charging method

You can set the price of bandwidth per megabyte by modifying the "Cost per Megabyte" field and pressing the "Set" button.   The total cost deducted from a user's account is equal to the number of megabytes used multiplied by the value set here.

You have two additional options about how your users are charged for bandwidth usage:

- **Charge for sent data** – Select this option if you want to charge for outbound data that users send while browsing the Internet
- **Charge for cached data** – Select this option if you want to charge your users for cached content. By turning this option off, your users will not be charged for data read from your proxy server's cache.

Event Log

The PaperCut event log is divided into three sections (on three tabs). The first section is the **Print Job Log**. The *Job Log* provides a detailed history of all print jobs printed via the print server. The second section is the **Net Use Log** that summarizes each users daily Internet usage. The third section, called the *Application Event Log,* lists application specific events. Examples of events include starting and stopping of the PaperCut service and the status of any schedules allowances. After adding new printers to your network and printing test documents, the event log should be investigated to ensure all is functioning correctly. Administrators should check the event log on a weekly basis.

Exporting the Log Data

PaperCut maintains a detailed log of user's printing and internet use history. Log data can be exported as a CSV/Excel file and then imported or opened in other applications for analysis. Microsoft Excel offers a number of analysis possibilities. For example:

- Graphing user activity
- Determining weekly trends
- Justifying to management that a new printer is required in the marketing department.
- Calculate revenue raised on a printer by printer basis
- Visually show the users how much paper they use!

Reports, Custom Reports, and Charts

PaperCut stores its print & internet audit log in a Microsoft Access database. The print job log was introduces in version 2.0. The Access Database file format provides Network Administrators the flexibility to develop custom reports to meet their organization's requirements or integrate PaperCut into alternative accounting systems.
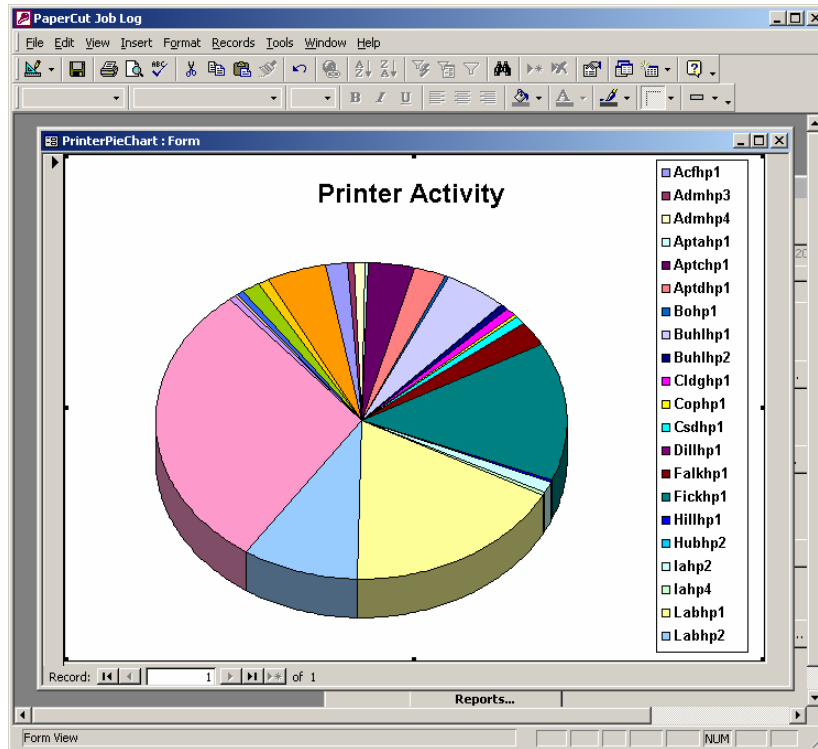
Figure 21: Example printer activity graph

PaperCut provides a number of pre-build sample reports, charts and graphs. These reports should meet the requirements of must organizations. System Administrators with Microsoft Access experience should have no problem developing their own custom reports to meet their needs.

The Reports option is accessed thought the *Event Log* section by clicking on the **Reports…** button. This feature requires a copy of MS Access on the system hosting the printers and PaperCut. A "snap-shot" of the database may be saved as a Microsoft Access file, allowing it to be copied and opened on another system with Access installed.

> **Tip:** It's recommend that custom reports be created in a separate Microsoft Access database that links to the live log data. This approach ensures that your custom reports will not be overwritten in an upgrade! PaperCut provides such a linked database ready for designing your custom reports.

PaperCut provides a template database ready for creating your own reports. This database can be opened in the following ways:

1. Open the PaperCut reports via *Event Log -> Print Job Log -> Reports...* then press the ***Design Custom Reports…*** button.
2. Directly access the template database by opening the Microsoft Access file in:

C:\program Files\PaperCut\CustomReports\CustomAccessReports.mdb
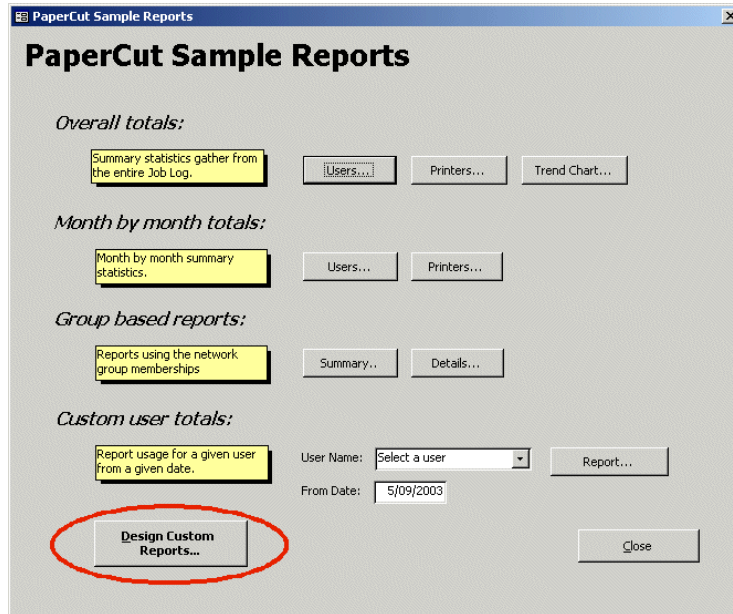
Figure 22: *The Design Custom Reports button (highlighted) opens a template database with links to the live dataset.*

This template database contains a "link" to the live log dataset. Changes to this database, such as custom reports, queries or graphs, can be made to the file without the fear of corrupting any of PaperCut's important files.

> **Note:** *Microsoft Access is a complex application. PaperCut's data model has been build with simplicity as an important consideration; however organizations designing custom reports should allocate the task to a person with previous Microsoft Access experience.*

Changing the Deny Printing Messages

PaperCut will send uses a message when a print job is denied. The messed is sent using Window's build-in messenger service. This is commonly referred to as "WinPopup" or "net send". For uses to receive these messages from the print server, the user's workstation will need to be configured to receive WinPopup messages.

- Windows 95 & 98 – The *WinPopup* windows optional component must be install. You will find this on the Windows CD Rom. It's recommend that you place a shortcut in the StartUp folder so the *WinPopup* software starts on login.
- Windows NT, 2000, XP, 2003 – The "Messenger" system service must be running. This is installed and enabled with the default Windows install. No action is normally required.

The message sent to can be customized under the **Options** section on the Print Charging Tab. As of version 4.2, multi-line and adaptive macro based messages are support.

The message can be customized with network specific information. For example, you may wish to include the contact name of the network Administrator or the name of the person responsible for administering user accounts.

The WinPopup message may also include *Substitution Macros*. The "%" delimiter denotes the Substitution Macros. PaperCut automatically replaces the Substitution Macros with dynamically generated text. A full list of available Macros are listed below:

Substitution Macro	*Description*
%PRINTER%	The name of the printer the denied document was printed on
%REASON%	The reason the print job was rejected. This may include, insufficient Credit, too many pages, or invalid or disallowed document format.
%DOCUMENT_COST%	The cost of the denied document
%PAGES%	The total number of pages the denied document contained
%CURRENT_CREDIT%	The current credit in the user's account. (Their account balance)
%DOCUMENT_NAME%	The name of the rejected document (not available on all hardware)
%MAX_PAGES%	The maximum pages per print job that this printer allows
%MAX_COST%	The maximum cost document that a user is allowed to print

4. Using the Web Tools

PaperCut includes a series of "Active Server Pages" to provide standard web browser access to important PaperCut tasks. <u>The Web Tools add-on needs to be installed and setup separately</u>. See later in this user guide for further information. The web tools are an important component of PaperCut and time should be allocated to complete this setup task.

The Web Tools are broken into two sections:

- **User Tools** to provide read-only access to user oriented information such as the user's account status, print and Internet history, transaction history, and tools such as the ability to user TopUp cards or transfer funds to other users.
- **Administration Tools** for system administrators to access and remotely administer user accounts.

The two Web Tools sections are password protected. By default only users in the *Administrators* group have access to the account administration functions.

User Tools

All network users may use the page at http://*PrintServerName*/papercut/ (change *PrintServerName* to the name of your print server). The "My Summary" page gives network users access to their current account balance and summary usage information. This web page replaces the functionality offered by the User Inquiry Tool.

Users can also view their recent print, internet and transactions by clicking the appropriate link on the left menu.

Other users tools include:

- Transfer Funds – allows users to transfer funds to other users, which is perfect for group projects, etc.
- Use TopUp cards – allows users to use TopUp cards to add credit to their account. See the section on TopUp Cards.
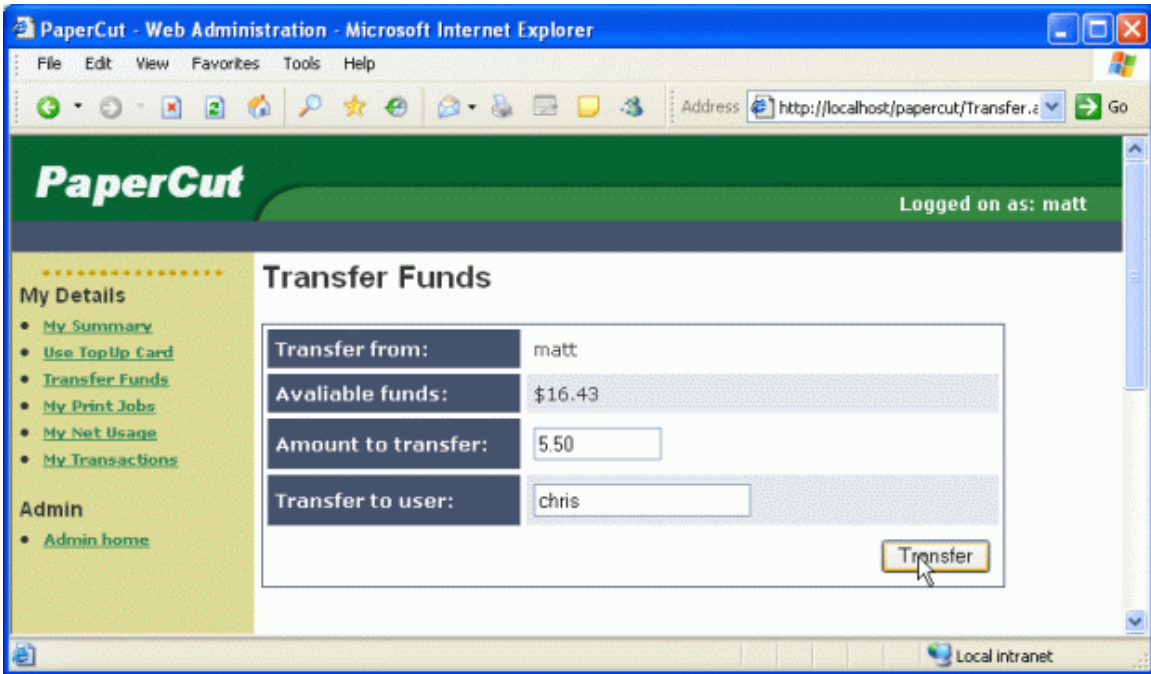
Figure 23: The Transfer Funds screen can be used to transfer funs to other users

Administration Tools

Account Administrators have access to the administration page at
http://*PrintServerName*/papercut/Admin.asp. This pages displays a list of administration tasks
that an account administrator can perform. Clicking on the "User Administration" or "User List"
link will take you to a list of users with their current account balance and a summary of their print
and internet usage. Clicking on their name will open pages where account credit and other
privileges can be altered. After editing a user's account balance, press the "Save" button to
commit changes.

The *Adjust Credit* section provides functions to quickly apply credit adjustments to the user's
account. A comment can be associated with the adjustment so both the user and other
administrators can see the reason for the change via the transaction audit log.
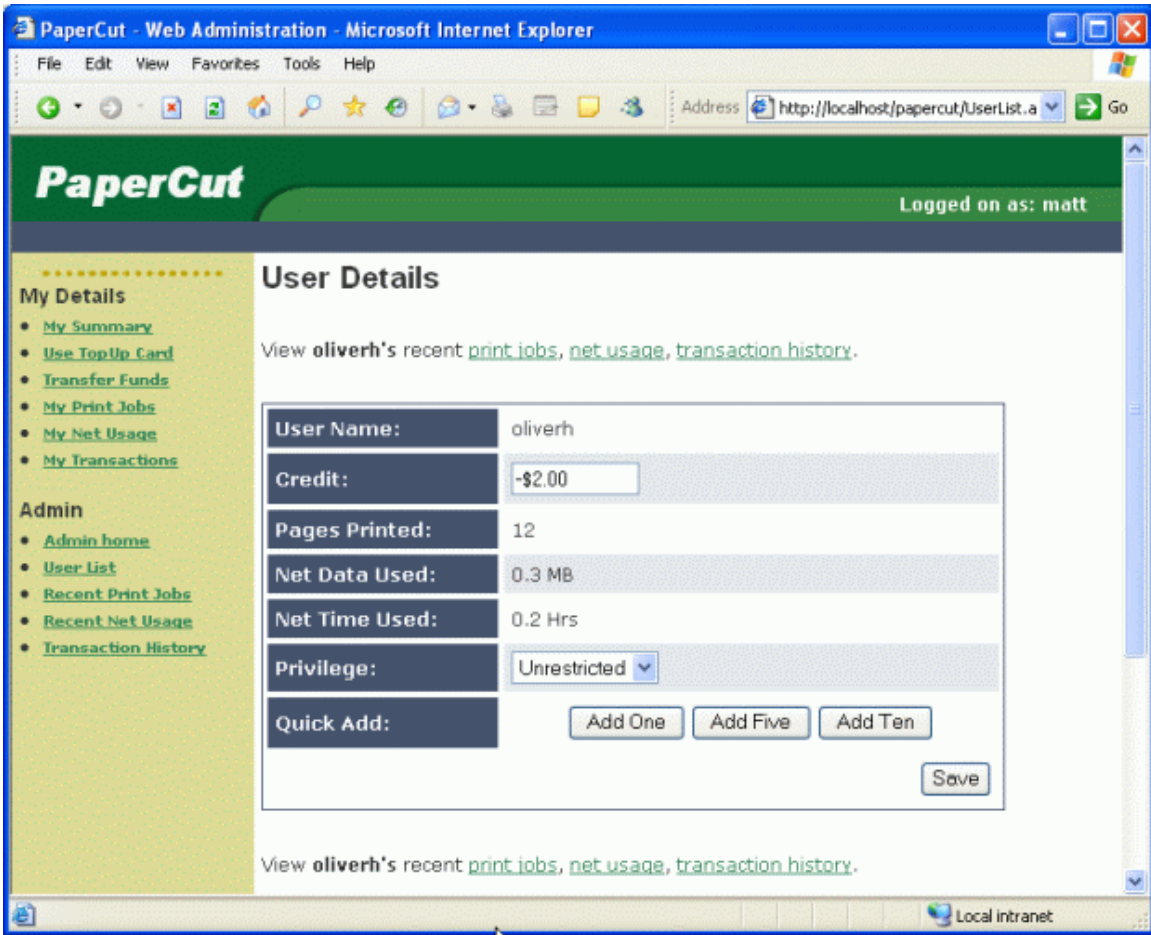
Figure 24: *After editing a user's account balance, press the "Save" button to commit changes*

On the user list screen, you can click the pages printed, or net usage columns for each user to take you to the detailed print or net log for that user.

You can also view recent print jobs, net usage and transactions by selected the relevant links from the Admin menu on the left.   This shows log information on the PaperCut server that the web tools are running on.

> ***NOTE:*** Like the Event Log, PaperCut only performs detailed logging on the server where PaperCut is installed. If you want to get a consolidated view of print, net and transaction logs you can use the PaperCut log Import tools that can be found in the "Event Log" section of the Admin Console.

Web Reporting

The web reporting provides a number of predefined reports (one-click reports) and also allows for ad-hoc reporting of printer and internet usage. Predefined reports include "Top Print Users", "Top Internet Users", "Largest print jobs", etc.

Pressing the "Export to Excel" button to export the data to a local Excel allowing further detailed analysis. Ad-hoc web reporting combined with the power of Microsoft Excel provides a limitless analysis options.
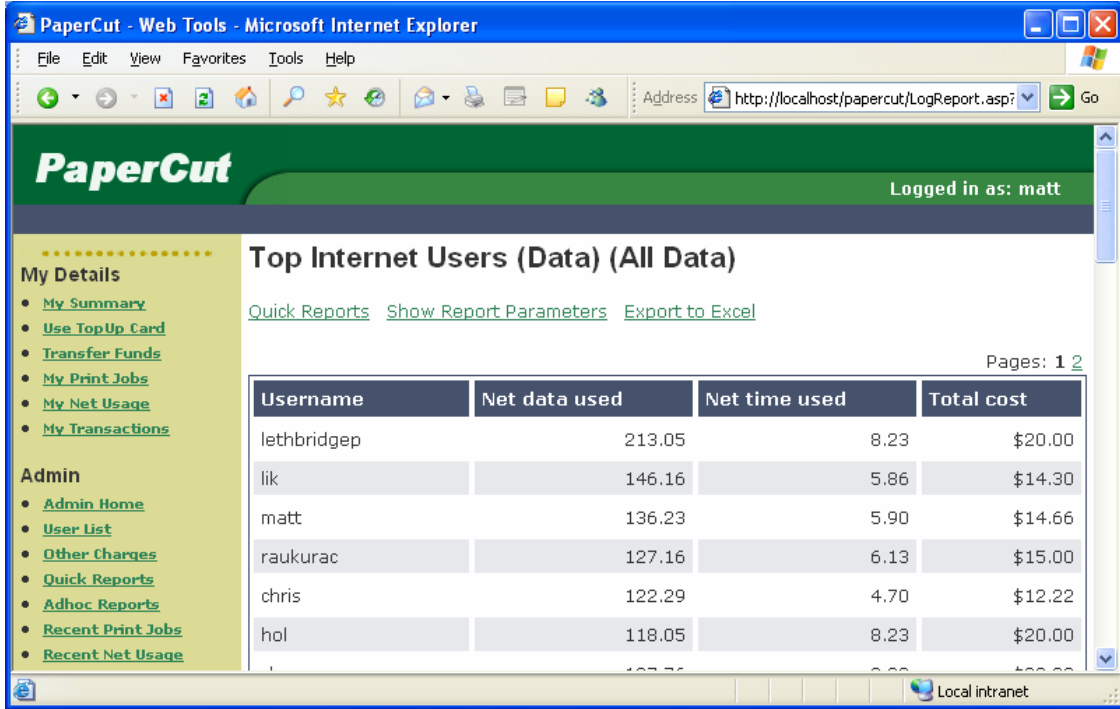
Figure 25: *Top Internet users by data downloaded*

Other Charges (manually charging users for associated services)

The *Other Charges* screen provides the ability to manually charge users for items other than print and internet usage.   For example, it allows charging for special paper, binding fees, or even library fines. This is another way that PaperCut helps consolidate all you user resource management requirements. All *Other Chargers* transactions are recorded and listed in the user's transaction history including any comments associated with the transaction.
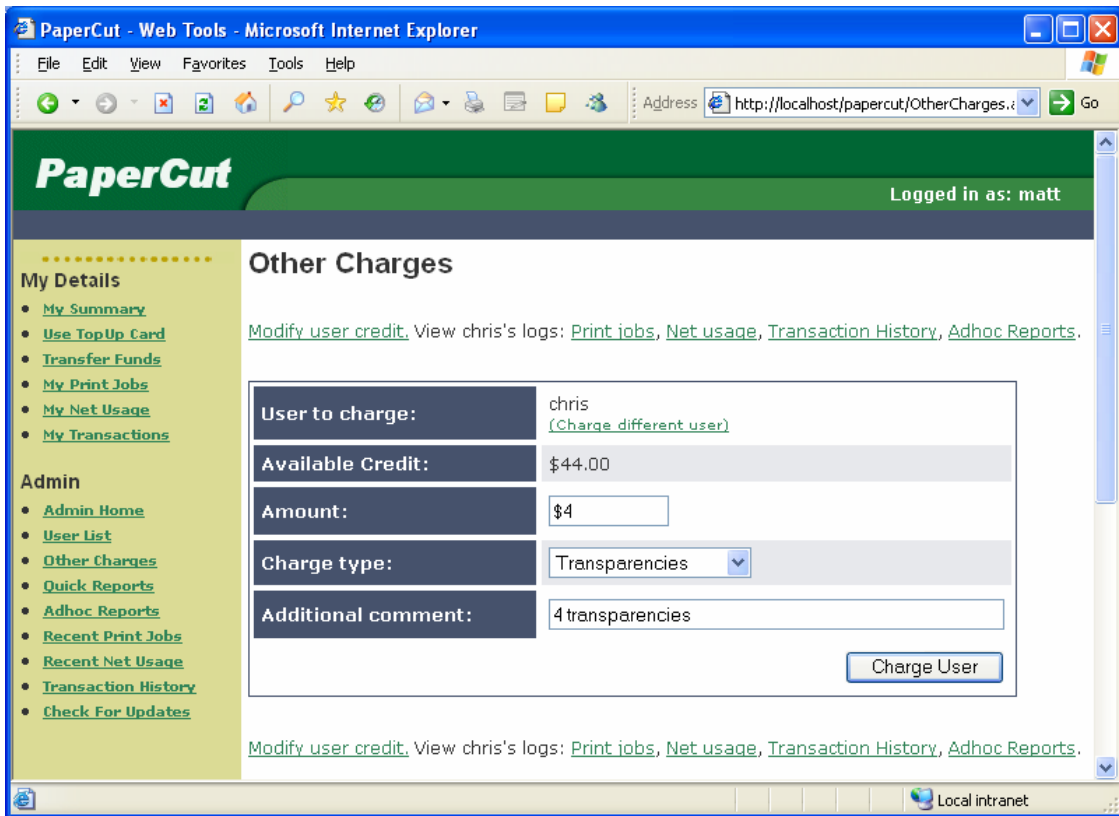
Figure 26: *Web Tools: Charge users for items other than print and net use*

5. TopUp Cards

Many organizations run PaperCut Quota in either a silent logging mode or as a way of enforcing sensible quotas. On the other hand, other organizations choose to run PaperCut in "charging mode" requiring users to make payments in advance. Recording and entering payments can be a time consuming process for staff or system managers. PaperCut offers a web interface for user account management to assist with the process, however there is still the need for someone to manually assign credit. The TopUp card system included with PaperCut streamlines the payment process and moves much of the manual handling over to the end-user.

The TopUp Card system is best described by walking through the payment process:

The Users Perspective

Amy is a student at a local high school. The school uses PaperCut for their printing and Internet charging. Amy is allocated $5.00 a week for printing and Internet use. This week she has used all her allocation but still has one assignment to print on Friday. She purchases a $5.00 PaperCut TopUp Card from school canteen. The card contains a 16-digit identification number. She logs onto the schools intranet site, enters the PaperCut section, and enters the card's ID number. Her account is automatically credited $5.00.

The Administrators Perspective

Andrew is a system administrator at the same high school. At the start of the term he used PaperCut's TopUp card wizard to general 500 TopUp cards of $5.00 value. These were generated in 2 batches. The first batch was prefixed with C1 and the second batch L1. The C1 batch is to be sold at the school canteen and the L1 batch sold at the school library.

The card wizard generated a "number definition file" for each batch. Andrew imported these numbers into PaperCut. Andrew took the time to customize the look of the cards to include the school logo and simple instructions on how to use the card.

During the year Andrew is able to track the cards sold and uses the batch prefixes to track where students like to purchase cards. Andrew also keeps an eye on the event log and has disciplined students attempting to guess card numbers.

The TopUp Card System

PaperCut Software Pty. Ltd. has worked with a number of organizations to design the TopUp card system. A number of payment technologies were evaluated over the period of two years. These technologies included vending machines, smart cards, micro-payment systems, and manual processing. The TopUp card system proved to be the most successful and cost effective solution. TopUp card concept is now the de facto standard in other industries such as pre-paid mobile phones.

PaperCut's TopUp card system is 100% software based. There is no need for special hardware such as smart card readers or special coin or vending machines.

The TopUp card system is included as standard with PaperCut Quota. The system includes:

- A card wizard application for assisting with the process of creating new cards.
- A web page for end-users to enter card numbers
- A security framework for tracking card use and implement fraud prevention

The user guide section title "Creating TopUp Cards" details the process of creating your own TopUp cards.

To use a TopUp card to assign credit to your account (a standard user's account):

1. **Purchase** a TopUp card from the appropriate person/place. The network administrator creates TopUp cards specific for the organization. In Schools, cards are often sold at the Library or School Cafeteria.
2. **Open** a web browser and navigate to the PaperCut Web Tools home page. Your account status should display.
3. **Click** on the *User TopUp Card* link on the left-hand navigation bar.
4. **Enter** the TopUp Card number in the *Card Number* box and **press** *Use Card*.
5. If the card's number is valid, the credit as listed on the card will be transferred to your account and this will list in your transaction history.
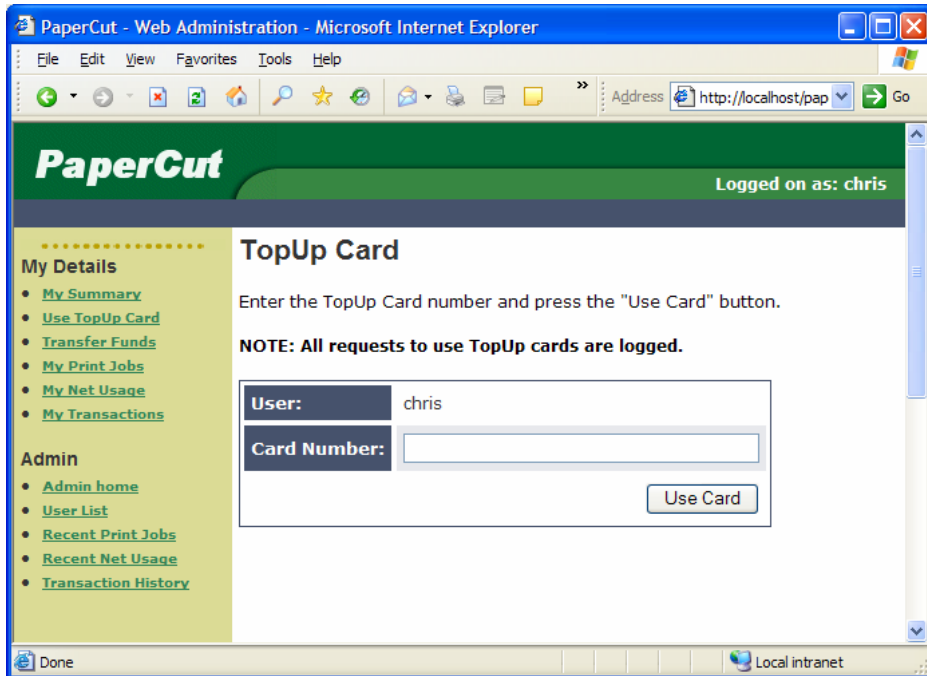
Figure 27: The TopUp card entry page included with the Web Tools interface.

6. The User Inquiry Tool

Figure 28: The User Inquiry Tool

The *User Inquiry Tool* (UIT) is an optional program for use on Windows network clients. The *User Inquiry Tool* automatically displayed when the user logs on (at startup). This gives the user an indication of their account status providing the user with a warning when balance is nearing zero. If the account credit displays red, the user has inadequate funds for printing and/or internet use. In addition to the *User Inquiry Tool*, users are also notified with a popup *Winpopup* message if they attempt to print with inadequate funds. The manual refresh button located in the top right-hand corner will update the balance.

The User Inquiry Tool minimizes to the Windows Notification Tray, and will alert users when they have a low balance with a balloon message as shown below. The message that is displayed can be customized to your needs.
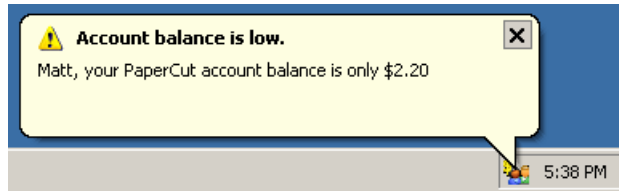
Figure 29: User Inquiry Tool warning message

The user can also hover over the icon in the task to see their account balance.

Figure 30: User Inquiry Tool showing credit when hovering over the icon

The *User Inquiry Tool* is optional and is NOT required for the print or internet charging process. As an alternative, or to compliment, the *User Inquiry Tool* consider setting up and grant your

users access to the PaperCut Web Tools. The Web interface provides information on the user's account status and additional information and functions such as their transcription history, internet and print use, and access to the TopUp card and transfer feature.

> **TIP:** The *User Inquiry Tool* contains a link to www.papercut.biz. This link can be changed via the UIT's setup configuration file. Consider changing this to a page on your internet site that offers access to PaperCut Web Tools interface and/or a page detailing your organizations printing and/or internet use policy.

6. Possible Implementation Scenarios

The following scenarios outline some of the many ways in which PaperCut can be used in organizations. PaperCut is a very flexible program. It can be used to implement a 100% user pays system, used to promote responsible use via budgeting, or just simply configured to silently audit printing and Internet activity. The following explanations may assist you in finding the right model for your printing environment.

The School

Goal:

The primary aim and motivation for using PaperCut is to minimize waste, and promote economic and environmental responsibility within the student population. A secondary aim may be to assign staff printing and Internet costs across faculties as part of the budgetary process, as is commonly done with photocopying.

Strategy

- All printers to be shared through the print server(s) and assigned realistic costs
- For Internet usage charging, PaperCut is set up on proxy servers and assigned realistic bandwidth or time based costs
- Staff to be given their annual allowance and set to Unrestricted
- Students to be given a small initial allowance and restricted so they can't exceed their allocation
- Students to be topped up at regular intervals such as at the beginning of term.

The students should be given a PART of their annual allowance at the start of the year and then topped it up at regular intervals, either manually or using the scheduler. This approach will prevent students "blowing" their years printing and Internet usage in a very short time. Students who run out of credit can either be given an advance or required to pay for excess.

Staff should be informed that they have been allocated their yearly budget. Staff are unrestricted so printing or Internet access will never by denied by PaperCut. The query function may be useful for monitoring the total expenditure within faculty groups.

The *User Inquiry Tool* should be installed on all network clients, so both students and staff are aware of their account balance. If students pay to top-up their accounts, it may be useful to install a second remote copy of the *PaperCut Administrator Console* on an NT/2000 system in the accounts office or configure the PaperCut Web *Interface* for use by office staff.

> ***Tip:*** *Consider weighting the cost of your printers to promote printing on high volume laser printers. Information on the actual cost of printing a page is often available from the printers manufacture. PaperCut's load analysis feature maybe useful here.*

The Legal or Accounting Firm

Goal

The purpose here is not to limit or restrict printing and Internet usage, but rather to monitor and assign costs to clients or projects.

Strategy

The **PaperCut Enterprise** version provides the functionality required to implement billing to account or job numbers. Please see www.papercut.biz for more detail about our Enterprise version.

The Business

Goal

Transfer the responsibility of printing costs and budgets, from the IT Department, to the individual company departments or users. Again the purpose here is not to restrict printing, but rather track expenditure and audit all printing and Internet use & activity.

Strategy

- All printers to be shared through the print server(s) and assigned practical costs
- For Internet usage charging, PaperCut is set up on proxy servers and assigned practical bandwidth costs
- Staff network accounts to be assigned to Windows groups according to their departments
- At the start of a budget period, users accounts are set initially to zero and Unrestricted
- At the end of a budget cycle, the query function is used to calculate the total expenditure for each department

This strategy provides an accurate audit of the expenditure of each department. Accounts start off at zero and counts down during the budget cycle. The query function is used to calculate the printing cost specific to each department. With this accurate audit, printing and Internet budgets can become the responsibility of the individual departments. Department management can now set their own budgets and control their own departments printing & internet expenditure.

Tip: *Avoid overlapping group members. Try to keep you network groups mutually exclusive to avoid confusion with permissions and queries. It will also prevent possible doubling up on any scheduled funds.*

7. Setting up your print server

This section covers the basic installation of PaperCut onto your network print server. Complex installations, such as configuring multiple print servers on a domain, or remote administration, are covered later in this section. *A basic to intermediate knowledge of Windows network is expected.*

> **NOTE:** *If you are also installing Internet Charging please also read Section 8. Setting up Internet Charging below.*

Configuring the Network

For accurate tracking of print jobs, PaperCut requires network clients to be configured to use a Windows print server. PaperCut will be installed on this print server. If your network currently uses a Windows server as a print server, then chances are, no modifications will be required.

The steps in configuring a network are as follows:

1. **Connect** (or Capture) all network printers on a Windows NT/2000/XP/2003 server.
   See Appendix I
2. **Share** the added printers.
3. **Configure network clients** to print to the shared printers on the print server.

This configuration will ensure all clients print **via** a Windows Print Server. Clients should NOT be configured to print directly to the printers.
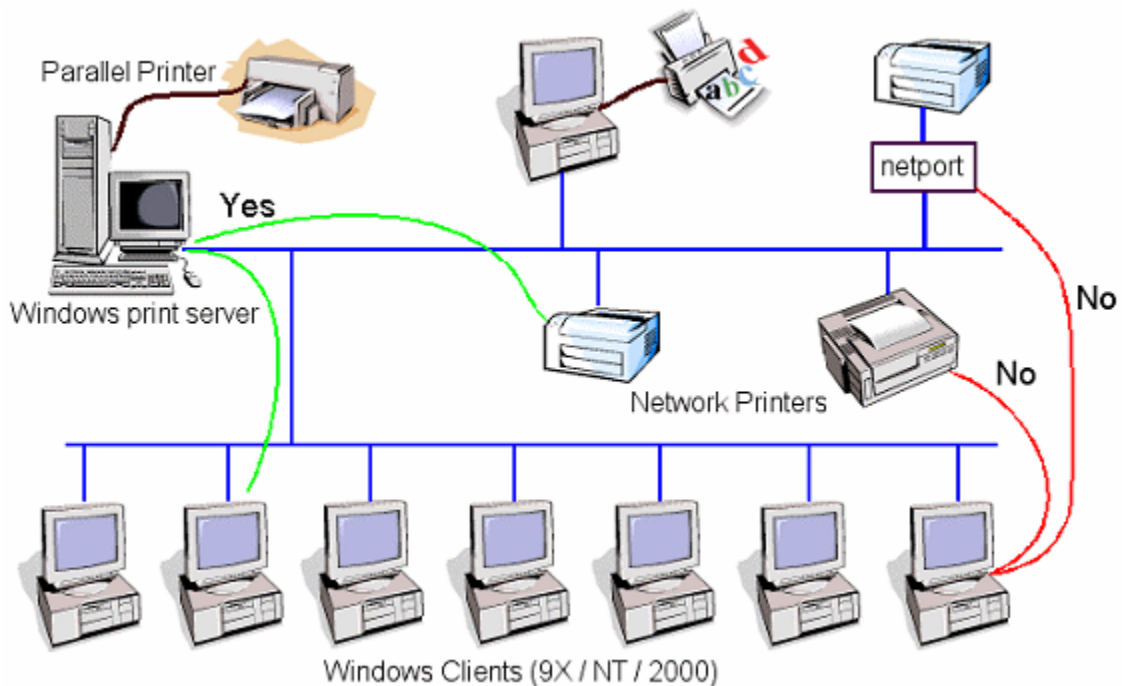

Figure 31: *Network Diagram including clients, print server and printers.*

Printing via a print server allows PaperCut to intercept print jobs and charge users accordingly. A print server is a system on the network responsible for centrally hosting print queues and sharing these queues as network resources (viewed via My Network Places). Hosting printers on a server is the recommended way to manage printers in a network environment. It ensures printers are centralized on a single system providing many management benefits such as centralized queue management, permission and driver management, etc. A print server does not necessarily have to be a server dedicated to just this task. In most cases the print server may simply be the existing domain control or file server.

A *Domain Controller* can be used as a print server, although in very large networks it is recommended that a separate server be configured for this task. Often as existing file server may fit the role well.

PaperCut works by integrating with the print server intercepting print jobs as they pass through the queues. PaperCut can handle hundreds of printers on a single server so most networks will only need a single system dedicated to this task. PaperCut can handle a multi-server environment if legacy or network topology dictates.

Connecting printers to the print server

Printers may be connected to the print server via a number of connection methods. Network connected printers (printers with their own network card) are generally recommended and these printers should be added as *local printers* using a *Standard TCP/IP Port*. Please see **Appendix I** for more information including detailed step-by-step instructions covering different printer types.

Sharing printers

The printers on the print server should now be shared with appropriate names. To share a printer:

1. Right Click on the printer icon and select **Sharing…**
2. Select **Shared** and assign an appropriate name.

Configuring Network Clients/Workstation to print to shared printers

A printer can be configured on your network clients simply by adding a new network printer.

1. Open the **Printers** folder in the **Control Panel.**
2. Double-click on **Add Printer**.
3. Select **Network Printer**.
4. Click on **Browse…** and locate a *shared printer* on your print server.
5. The appropriate drivers will be downloaded and the printer installed.

Installing the PaperCut Software for Print Charging

- *Before installing **PaperCut** ensure you are logged on as a user with "Administrators" privileges.*
- You may be requested to restart your computer after running the install program. Before continuing, ensure that a restart is not going to upset your network users.

After installing, and restarting if required, select "**PaperCut**" from the start menu. You will be presented with the PaperCut setup wizard. This wizard will ask a few questions about your network configuration, and configure PaperCut accordingly.

Setup Wizard Screen: Installation Options

PaperCut can be installed both network print servers, proxy servers and other for remote administration of user accounts. Ensure that the "Print Server" option is selected, so PaperCut will be configured to monitor the printers attached to this print server.

Setup Wizard Screen: Internet Charging

If your print server is also running a proxy server, you may choose to enable Internet Charging. Please see Chapter 7 for further details.

Setup Wizard Screen: Network Configuration

PaperCut must query information about your domain users. As of the PaperCut 5.2 release, the user information can be queried in 2 modes: "Standard" and "Active Directory". The option to choose between these two modes is only available when installing on a machine in an Active Directory domain. If not in an Active Directory domain, PaperCut will default to "Standard mode".

Standard Mode

Standard mode supports NT mode domains and non-Domain based Windows networks. Standard mode will also work in Active Directory domains, however importing users from Organizational Units and Nested groups are not supported.

For normal network configurations, select "Get user information from the Primary Domain Controller". PaperCut will call the main server on your network to request a network user list.

If installing PaperCut on a standalone Windows NT/2000/XP based system or a Peer-to-Peer network, select "Get user information from this computer."

> ***ADVANCED:*** *If your print servers are trusted by a domain that contains all of your user accounts, you can specify the trusted domain with the 3rd option.*

Active Directory (including Org Units and Nested Groups)

The native Active Directory support is recommended in Active Directory networks that would like to import users from an Organizational Unit or Nested Group. The use of these Active Directory containers can significantly improve the manageability of the network, by logically structuring the organization in Active Directory.

For example, it is common in schools to define Windows security groups for each year level (e.g. Level 1 Students, Level 2 Students, etc). Using Active Directory nested group, it is possible to create a group "All Students" that just contains each of the "Level X Students" groups.

Testing the Installation

After initially configuring PaperCut, you will be presented with the user list in the main window of the PaperCut Administration Console. Now you must:

1. Add Printers to your charging list.
2. Assign a cost to each printer.
3. Assign credit to your users.

These operations have been covered earlier in the Manual.

It is important to take some time and do some testing. It is recommended that your print test documents on all your printers from a number of different network clients. Ensure that the "Page Count" in the user list, and printer list, increase corresponding to the number of test pages. Remember to press the *Refresh* button (the icon in the bottom left corner in the *Users* section) after printing your test documents. We also recommend you inspect the PaperCut *Event Log* after printing the test documents. If PaperCut does not recognize the printer language for any one of the printers a message will appear here.

8. Setting up Internet Charging

This section covers the basic installation of PaperCut onto your proxy server to enable Internet usage charging. Complex installations, such as configuring multiple servers on a domain, or remote administration, are covered in the advanced setup section. *A basic to intermediate knowledge of Windows network is expected.*

> **NOTE:** If you are also installing Print Charging please also read Section 7. Setting up your print server above.

How Internet Charging works

The PaperCut net charging service runs in the background on a server machine on your network. PaperCut Internet Charging provides two models for charging your users for internet access:

- Time based – charges users based on the length of time using the internet. This is useful in organizations where computing resources are scarce or you want to discourage extended internet usage
- Data based – charges based on the amount of data the user has downloaded or uploaded. This is useful in organizations where bandwidth is expensive, or you are charged by the megabyte by your service provider.

This Net Charging service reads the web proxy server log files (or log SQL database) periodically, counting how many megabytes each user has used, and the time each user has spent on the internet.

The user account database is updated to reflect each user's Internet usage, and their credit is debited by the appropriate amount based on your charging configuration. If you have detailed logging turned on, then PaperCut also tracks each user's daily Internet usage.

If you chose to enable the PaperCut feature to disable Internet access for users without any credit then PaperCut will disallow Internet access when the user has no remaining credit. If users have available credit or they are "unrestricted" then PaperCut ensures that they belong to the Windows security group that you configured to give Internet access to your users. If a user has run out of credit, PaperCut will remove them from this security group so they no longer have Internet access.

Proxy Server requirements

The PaperCut Internet charging module requires a compliant proxy server in order to monitor user's network usage. PaperCut currently works with the following proxy servers:

- Microsoft ISA Server 2000 and 2004
- Microsoft Proxy Server Version 2.0
- Wingate
- FreeProxy
- Squid (with LDAP helpers or Samba Winbind for full compatibility)
- Any other proxy server that generates W3C compliant log files

PaperCut can also efficiently monitor proxy log files across network shares if PaperCut cannot be installed on the proxy server. When the proxy server runs on a platform other than windows, like Squid on a Linux based system, configure PaperCut to read the log files across a network share (i.e. a share exported via Samba).

The proxy server must be configured to require authentication so that the username is captured and written to the proxy server log files. The username used to authenticate to the proxy server must match the user's Windows username. If this is not configured correctly PaperCut cannot match the Internet usage with the user login ID's.

> **For information on configuring Microsoft ISA Server 2004, see Appendix IV**

In order to <u>disallow</u> internet access to users, the proxy server needs to be configured to allow internet access only to users that belong to a particular Windows security group. PaperCut will ensure that only users with credit belong to this group.

Configuring the Network

PaperCut allows for a variety of network configurations for Internet usage charging. PaperCut Internet charging can operate on networks with or without PaperCut print charging. To simplify administration PaperCut Internet charging should share the same user and account database as the print charging installation.

The following configurations are supported:

- Print and Internet Charging:
  - PaperCut running on a single server acting both as a print & proxy server
  - PaperCut running on a single print server(s) and monitoring a proxy server remotely via a network share

    o   PaperCut running on a separate print server(s) and proxy server

• Standalone Internet Charging (only recommended if not using print charging)

    o   PaperCut running on proxy server using it's own user database

Use the following table to determine which PaperCut Internet Charging configuration best suits your needs.

Internet charging	Print charging	Server Setup	Recommended configuration
✓	✓	• Single server as both proxy and printer server	• Setup a single server as both a proxy and print server. • Install PaperCut as a "Primary server" on this server. • Select "Enable Internet bandwidth charging" when prompted.
✓	✓	• Separate print and proxy servers • Single PaperCut installation on print server • (Also use this option if your proxy server runs on a non-Windows platform)	**Preferred separate proxy configuration** Simplifies the configuration and allows detailed usage logs to be consolidated on a single PaperCut server. • First install PaperCut as a Primary server on your print server. • Select "Enable Internet bandwidth charging" when prompted. • Create a share on your proxy server to allow PaperCut to access the logs. The share only needs to be available to the "Administrators" group. • Choose the path of your proxy log files on a network share. (Ensure you use the \\proxyserver\logpath notation because mapped drives are not available to services).
✓	✓	• Separate print and proxy servers • PaperCut installed on both print and proxy servers	**Alternate separate proxy configuration** Use this option if your proxy server logs cannot be made available to your PaperCut Server over a network share. • First install PaperCut as a Primary server on your print server, but **do not** select "Enable Internet bandwidth charging" when prompted. • Install PaperCut as a Secondary server on your proxy server, and select "Enable Internet bandwidth charging" when prompted. • See Section 9. Advanced PaperCut Setup for more details

		• Separate print and proxy servers • PaperCut installation on both proxy and print servers	• Install PaperCut as a Primary server on your proxy server • Select "Enable Internet bandwidth charging" when prompted.
✓			

Configuring Internet Charging

To allow PaperCut to monitor and charge users' Internet usage the proxy server must be configured appropriately. PaperCut uses the proxy server's log files to monitor Internet usage, therefore you must have logging enabled and configured correctly. It is important to ensure user authentication is enabled in the proxy server so that the users' details appear in the proxy's log files.

If you want PaperCut to disallow Internet access to users that do not have any available credit, then you must setup your proxy server so that only users in a single security group have Internet access (e.g. "Internet Users", however this group can have any name you like). PaperCut removes the user from this security group when they have no credit remaining, which removes this user's Internet access. When additional credit is added to the user's account they will be added back into the security group and their Internet access will be enabled.

IMPORTANT: The proxy server should be setup and running correctly prior to installing PaperCut Internet Charging.

> **For information on configuring Microsoft ISA Server 2004, see Appendix IV.**

Installing PaperCut Software for Internet Charging

- *Before installing **PaperCut** ensure you are logged on as a user with "Administrators" privileges.*
- A server restart may be required after running the install program. Before continuing, ensure that a restart is not going to upset network users.

After installing, and restarting if required, select "**PaperCut**" from the start menu. You will be presented with the PaperCut setup wizard. This wizard will ask a few questions about your network configuration, and configure PaperCut accordingly.

The following sections list the screens that the setup wizard displays and describes how each screen should be used.

Setup Wizard Screen: Installation Options

Select Primary Server to install a Primary PaperCut server on this system.

> **NOTE:** If you've chosen to install separate copies of PaperCut on your print server and proxy server, then see Section 9. Advanced PaperCut Setup below.

Setup Wizard Screen: Internet Charging

This screen asks whether you want to enable the Internet usage monitoring. You must select this option to install the Internet Charging service.

Setup Wizard Screen: Network Configuration

PaperCut must query information about your domain users. For normal network configurations, select "Get user information from the Primary Domain Controller". PaperCut will call the main server on your network to request a network user list.

Setup Wizard Screen: System Service Setup

This screen asks for the user that the PaperCut services will be installed as. The user you specify must belong to the "Administrators" group so that it can add/remove users from the "Internet Access" windows group.

Setup Wizard Screen: Net Charging Proxy Logs

This screen allows you to configure where PaperCut should look for your proxy logs. PaperCut supports reading logs from log files (supported for all proxies), or SQL database (MS ISA SQL logging).

First choose your proxy server and whether the proxy uses file or SQL logging.

Proxy File Logging

The log file location should be set to the directory that contains the proxy log files. For example, Microsoft ISA Server puts its log files in the C:\Program Files\Microsoft ISA Server\ISALogs directory by default.

If you are not installing Internet Charging on a proxy server itself then select the network share location that contains the proxy server's log files. Make sure you use the \\servname\path

notation because Windows services cannot use mapped drives like "S:". You can do this by browsing to your share via "My Network Places->Entire Network-> …" (on a Windows NT machine browse through "Network Neighborhood").

Choose the appropriate proxy server type from the list. This will select the default log file mask for that type of proxy server. The log file mask is used to match the web proxy log files generated by the proxy server. This is required because some proxy servers put different types of log files in the same directory, but PaperCut only requires the web proxy log files. **Advanced:** To manually enter a log file mask, select "Other" then enter the mask in the text box.
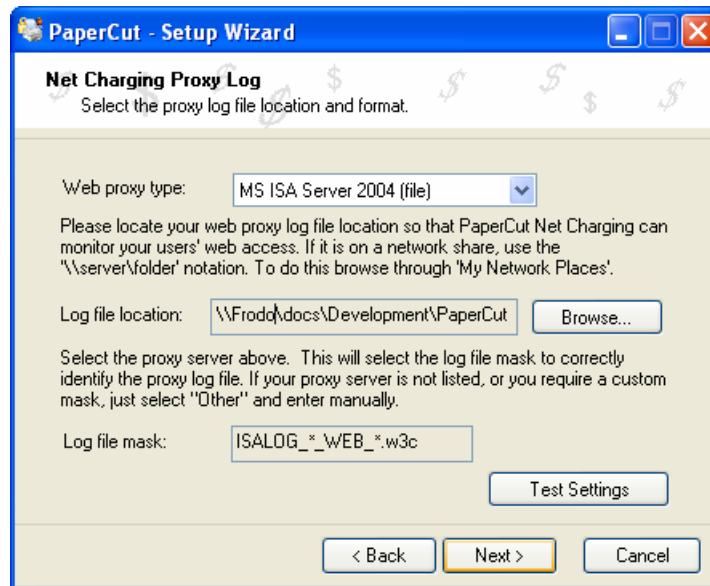
Figure 32: Configuring PaperCut to access the proxy log files

Proxy SQL Logging (MS ISA Server 2000/2004)

If your Microsoft ISA Server is configured to use SQL logging, then PaperCut can read the logs from the database instead of the log file.

First configure the connection details for the Microsoft SQL Server database that stores the proxy. Clicking the "?" will open a dialog that helps complete the connection details.

The required connection details are as follows:

- **Server** – The machine hosting the SQL Server
- **Database Name** – The database containing the log table
- **Use Integrated Security** – Select this if your SQL server uses Windows security for login authentication. Leave unchecked if using SQL authentication (i.e. uses username/password)

- **Username** – The SQL user to connect to database
- **Password** – The SQL user's password to connect to the database.

    NOTE: When using Integrated Security, PaperCut will connect to the database as the user that the PaperCut service is configured to run as (Configured on the "System Service Setup" screen above). So ensure that your SQL server is configured to allow this user to connect to the proxy log database.
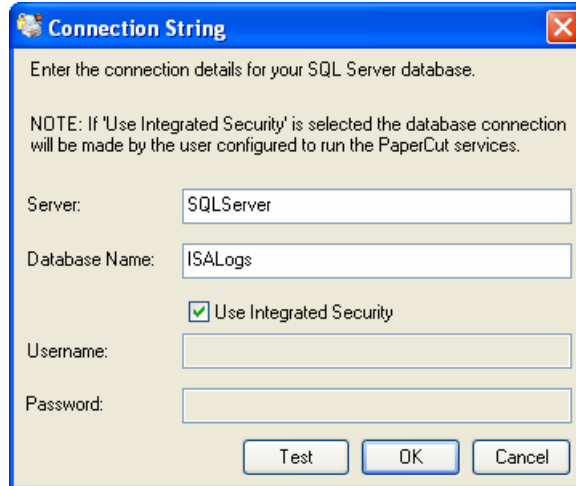

Figure 33: Configuring the SQL connection details

Once the connection details are completed, enter the database table that stores the proxy logs. By default the table name is `WebProxyLog`.
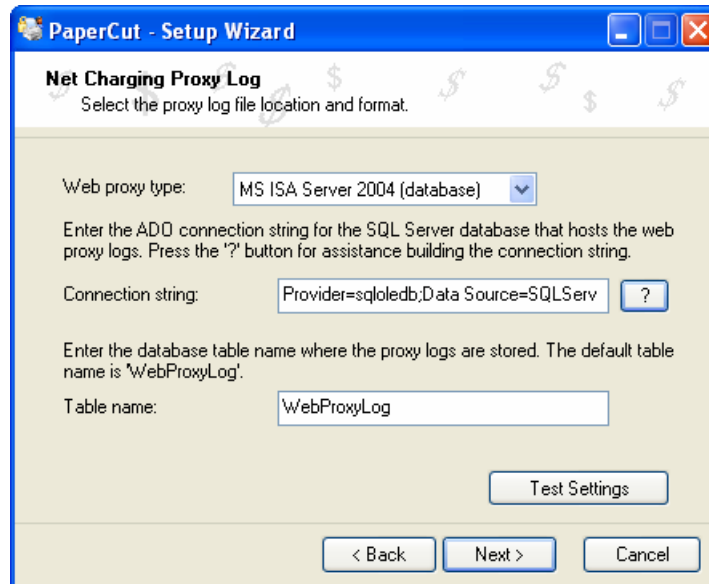

Figure 34:Configuring PaperCut to access the proxy SQL logs

Testing the log settings

Once you have configured these two settings press the "Test Settings" button. PaperCut will test the settings to ensure they are working correctly. PaperCut will pop up a message telling you the latest log file found that match the settings you specified. It then gives you the option of testing the processing the log file. If you select "Yes" then PaperCut will read the log file and display a summary of users' Internet usage. Note that this will not update the user databases, or debit any users account.
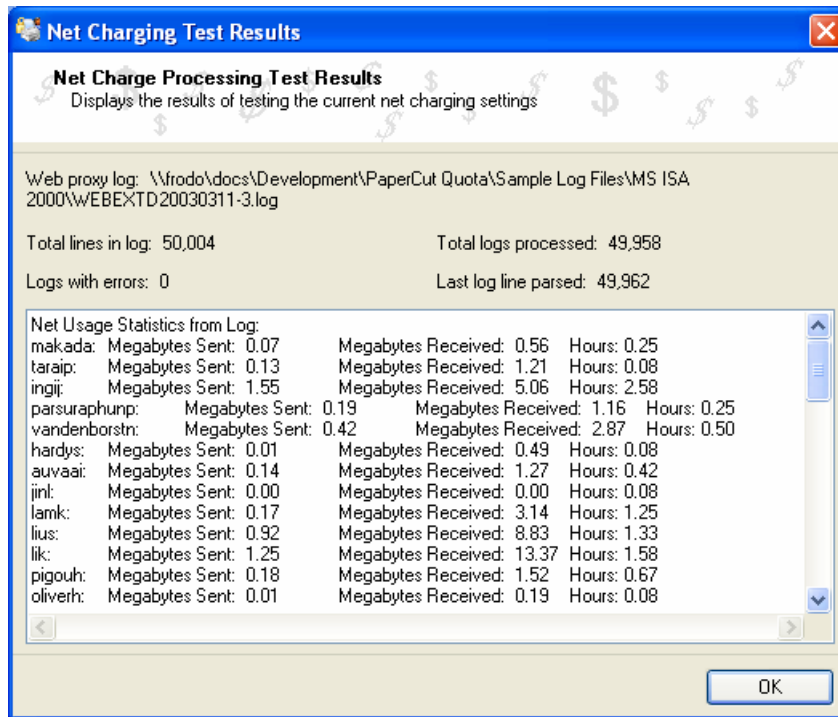
Figure 35:Results of testing processing the proxy log file

If a log file cannot be found then change your settings to ensure that the proxy server logs can be found. If your proxy server has not generated any log files yet, then it is OK to proceed if you are sure you have your proxy log settings correct.

Setup Wizard Screen: Net Charging Security

In order to disable Internet access to users that do not have any credit in their PaperCut account, select the check box on this screen.

If you want to enable this feature, then the proxy server must be configured to only allow users that belong to a particular domain group to have access to the Internet. This is discussed in the

Section above called "Configuring Internet Charging". PaperCut will add and remove user from this group depending on whether they have any credit remaining in their accounts.

You must select the security group that your users must belong to in order to have access to the Internet.

> *NOTE:* Be careful to select the correct group, because PaperCut will modify group membership based on users' credit balance. PaperCut will not allow a built-in group like "Administrators", "Domain Admins", "Domain Users", etc to be selected.

Setup Wizard Screen: Finished

You have finished the installation of PaperCut Internet charging then click "Finish" to complete the installation. The Internet bandwidth costs can be modified in the options screen of the PaperCut Administration Console.

9. Advanced PaperCut Setup

An intermediate to advanced knowledge of Windows network is required.

Domains with Multiple Print Servers or separate Print and Proxy Servers

On a large network it maybe necessary or desirable to split your printers among two or more print-servers, or your network may have a separate server dedicated to Proxy server tasks. PaperCut may be installed on a number server, and configured to use one central database (Primary Database).

What is a central database?

A central database is a single PaperCut database file located on your domain. Whenever a user prints via any printer attached to any print server or users the Internet through any proxy server, costs will be deducted from the user's account stored in this central database. It's like a bank. It doesn't matter what branch you visit, money are only ever removed/deposited from a single account. This central database is referred to as the **PaperCut Primary Database**.

When do I use a centralized database?

If users regularly print on different printers shared under different print servers, a centralized database should be considered. This will ensure all costs incurred by users are stored under the one account. *Five (5) servers per database is the recommend upper limit.*

If you use Internet Charging and your proxy server is a different machine to your Print Servers then you must use a centralized database.

Is this always required?

If users only ever use printers attached to the one print server and never roam across the network, a central database is not required. Simply use separate local databases on each print server. A common example is a WAN setup where users only ever use the printers in their office/building. In this environment, just install PaperCut on each print server as outlined in the "Installing PaperCut on your Print Server" section.

What if I have separate print and proxy servers?

If you are using both print and Internet charging then a print server should be used as the primary PaperCut server. If you are installing a proxy server as a secondary PaperCut server, make sure you know the name of the Primary PaperCut server prior to installing the software on your proxy server.

How to install PaperCut on multiple servers

Installing and configuring multiple print servers (or proxy server) running PaperCut to use a central database is a simple process, and is outlined below:

1. Install and configure **PaperCut** on one of your print servers. Follow the instructions as outlined in "Installing the PaperCut Software for Print Charging" or "Installing PaperCut Software for Internet Charging".
2. Located in the **PaperCut** folder is a sub-folder called "Database" in Windows Explorer. Usually found at C:\Program Files**PaperCut**\Database .
3. Right Click on the folder and select Properties.
4. Select the **Sharing** tab and press the **Permissions** Button.
5. Ensure the folder is shared as "PCDB$" and "PCDBA$". PCDB$ should be a read-only share. The PCDBA$ share should have full control access to the Administrators group.
6. Install **PaperCut** on your second print server or proxy server.
7. Run the **PaperCut Admin Console** after the installation completes.
8. When prompted with the **Installation Option** in the setup wizard, select the **Secondary Server** option.
9. When prompted for the Primary Server name, enter the Network name of the server hosting the central database.
10. After clicking the next button, you will be requested for a username and password for a user belonging to the Administrators group. PaperCut needs this account so it can gain access to the central database located on the primary server.
    - Run User Manager.
    - Add a new user named PaperCut and assign a password.
    - Set the password to **Never Expire**.
    - Add the user to the **Administrators Group**.
11. Continue with the wizard follow the instructions for setting up a single server in sections "Installing the PaperCut Software for Print Charging" or "Installing PaperCut Software for Internet Charging" above.

Secondary Server Considerations

All activity logging such as print job logs, net activity and transaction logs is undertaken locally on the server. Only the user account information (i.e. user's credit) is shared between servers in a multi-server environment. Logging print jobs in particular can be quite data intensive, so to save network bandwidth, PaperCut logs all data to local files on the server. For reporting purposes, PaperCut offers the option to amalgamate or merge logs from multiple servers into the one

database on the primary server. This operation can either be instigating manually, or optionally automated via a schedule task – for example, overnight or on weekends. The amalgamated log information is automatically made available to PaperCut's standard Microsoft Access reports and the Web Tools Interface including the Web Reports.

The import process works as follows:

1. The primary server detects the name of all secondary PaperCut servers located on the network.
2. Accesses each server in turn collecting the "Print Job Log", "Net Use Log" and "Transaction Log" databases via an administrator only share called PCLogs$
3. Extracts data from each log and merges this into the primary server's local logs.

TIP: For performance reasons, it is recommended that all logs on the secondary servers be "cleared" once every three months after a manual import operation.

To manually import logs located on secondary servers:

1. Log on as Administrator on the *Primary* PaperCut Server
2. **Open** the *PaperCut Admin Console*
3. Select the **Event Log** section
4. Click the **Import…** button located under the log record list
5. Select the option *Automatically import and merge logs from secondary servers*
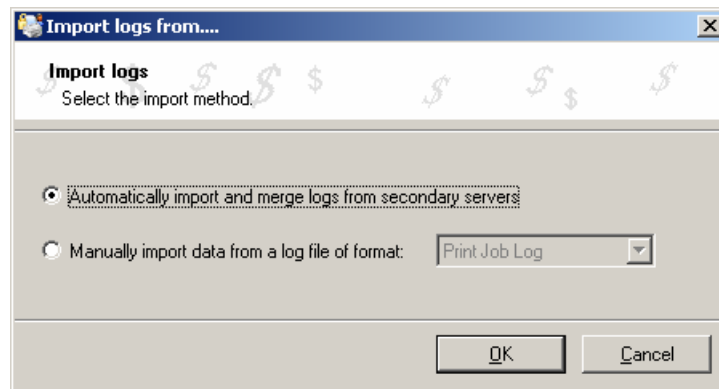6. Inspect the status dialog for any errors or information events.

Figure 36 – Importing logs from secondary servers

To schedule the automatic importing of secondary server logs

PaperCut provides a batch file located under the directory:

```
C:\Program Files\PaperCut\Scripts\importlogs.bat
```

This script automatically performs the import process and is designed to run out of the Windows task scheduler under and account with *Administrators* privileges. This script allows administrators to schedule the import process at a suitable time such as overnight or during weekends. Events associated with the automatic import process are logged in the PaperCut Application event log.

For more information on using the Windows Task Scheduler, please see "Using Scheduled Tasks" is the Windows operating system help documentation available in the Start Menu.

10. Installing Web Tools & Remote Administration

The Optional Web Tools offers remote administration of user accounts and a number of "user tools" accessed using a standard web browser. In addition, it can be used to browse recent print jobs and net usage. It's ideal for applications were remote access is required for simple account management in a "user pays" environment. For instance student account management from the IT help desk. In addition to simple administration, the web interface also provides network users with simple access to their account balance, usage logs, access to transfer credit to other users, and the ability to apply TopUp cards to their account. This functionality is referred to as "user tools"

> ***Note:*** The PaperCut Admin Console software offers more advanced management features. The web based administration option offers ease-of-use and has the advantage of not requiring the installation of additional software on the remote workstations. Non-technical users are also comfortable using a 'web pages' based system. It is ideal for the day-to-day user management tasks. For remote management of advanced features such as costs, filter rules and other features, consider accessing the PaperCut Administration Console using remote server access software such as VNC or Windows Terminal Server.

System Requirements for Web Administration

- ❑ Microsoft Internet Information Server (IIS)
- ❑ A standard web browser (IE 5+, Mozilla, or Firefox)

Installation

Installing the Web Tools Add-On is optional. PaperCut will function fully without the Web Tools, however all administration will have to be done using the main Administration Console. It is strongly recommended that you take the time to configure the web tools.

> ***NOTE:*** As of PaperCut 6.0, the installer automatically creates and configures the web tools (if IIS is installed on the server at the time).   The installer creates a new IIS virtual directory called "papercut" and configures it exactly as described in the instructions below.   To test the web tools, open a web browser to http://your-server/papercut.   If the web tools were not installed, then follow the simple steps below to install and configure them manually.

1. Install the Internet Server Software

Microsoft Internet Information Server (IIS) with ASP extensions is required on the primary

PaperCut server, and can be installed either before or after the installation of PaperCut. IIS with ASP is available with the NT Server Option Pack or comes as an optional component with Windows 2000 Server/Pro, Windows 2003 and Windows XP.

> ***NOTE for Windows 2003:*** Windows 2003 Server does not run ASP pages by default, so this must be enabled after installation. To do this, open Control Panel->Administrative Tools->Internet Information Server. Select the "Web Service Extension" node, and "Allow" the "Active Server Pages" extension.
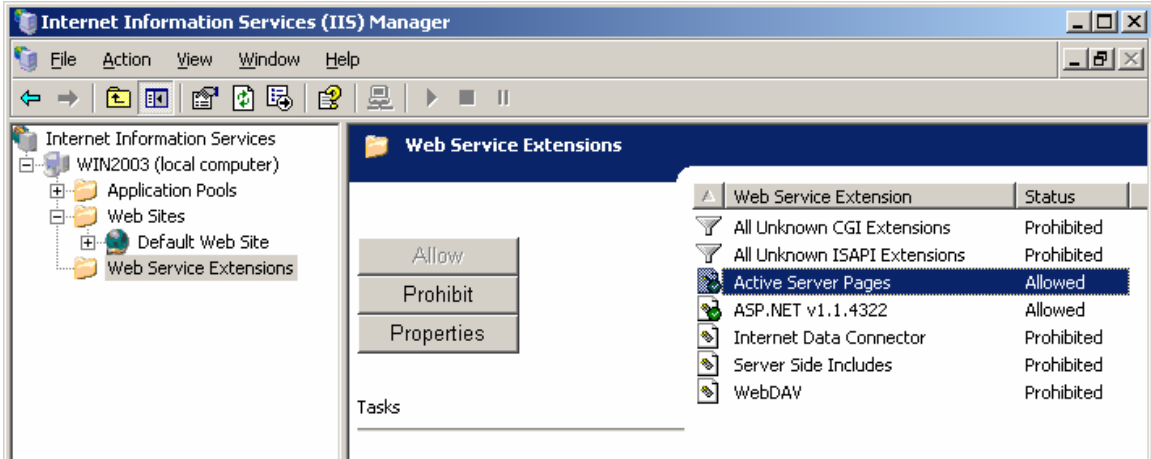

Figure 37: Enabling Active Server Pages on Windows 2003 Server

2. Adding a Virtual Directory to IIS

You need to create a virtual directory for the PaperCut Web Tools. To do this:

- Open the IIS console (Control Panel->Administrative Tools->Internet Information Services)
- Right-click on the Web site you want to create the virtual directory under (the default is "Default Web Site")
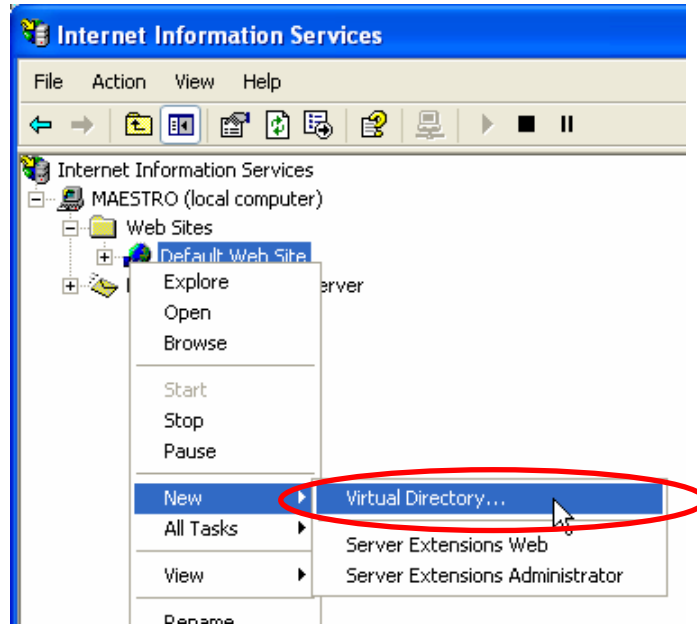
Figure 38: *Creating an IIS virtual directory for PaperCut Web Tools*

- Enter the name of the virtual directory in the "Alias" field. E.g. "papercut". Then press "Next"
- Select the directory where PaperCut Web tools are installed. i.e. `C:\Program File\PaperCut\WebAdmin`. Then press "Next".
- Ensure that the "Run scripts" option is enabled. Then press "Next".
- Press the "Finish" button

The PaperCut web tools require users to authenticate with IIS. To configure IIS to <u>force</u> user authentication, you need to <u>deny</u> anonymous access on the PaperCut virtual directory. To do this:

- Right-click the PaperCut virtual directory in the IIS console and select properties
- Select the "Directory Security" tab
- Press the "Edit" button in the "Anonymous Access and Authentication Control" section
- Disable anonymous access and make sure "Integrated Windows Authentication" is enabled (see below)
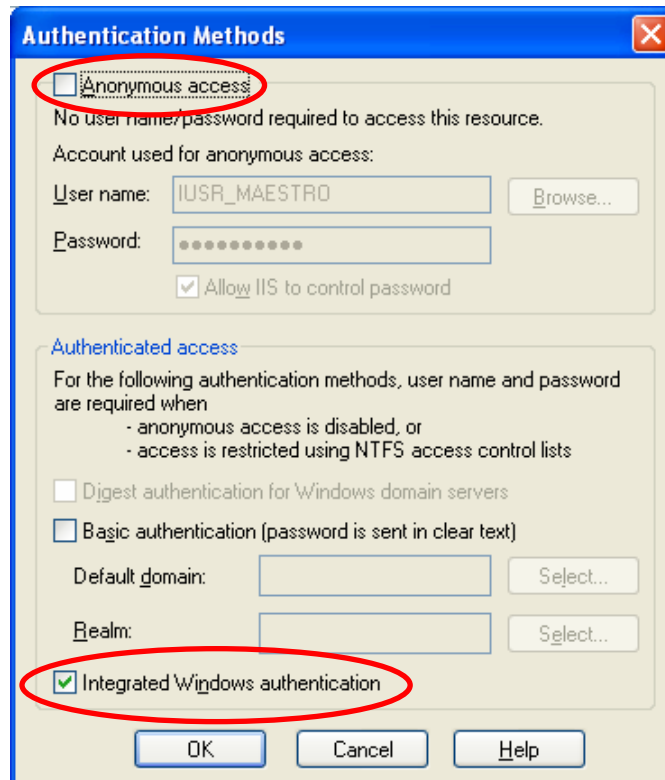
Figure 39: Configure IIS to require user authentication

PaperCut Web Tools requires IIS Session State to be enabled. This is usually enabled by default, but sometimes this option is disabled by some software or an administrator. To check that this is enabled:

- Right-click the PaperCut virtual directory in the IIS console and select properties
- Select the "Virtual Directory" tab
- Click the "Configuration" button towards the bottom right of the screen
- Select the "Options" tab
- Ensure that the "Enable session state" option is enabled (see screenshot below)

Figure 40: Enabling IIS Session State

3. Tailoring the Interface

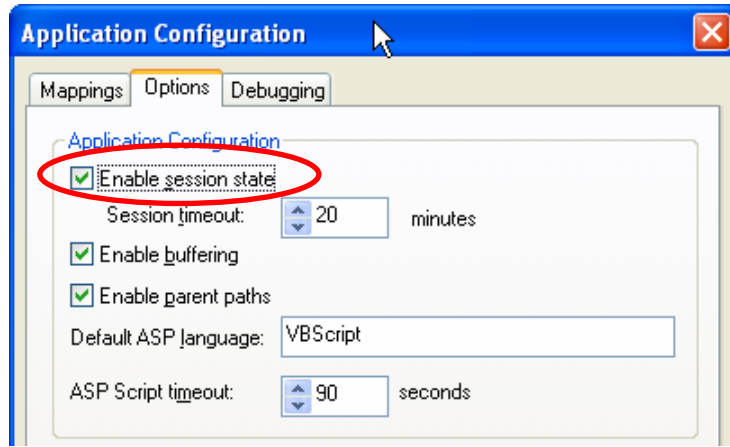PaperCut's web tools interface offers two levels of control over the functionality and look. The first method, editing the configuration file, offers control over which features are enabled and what language the interface will appear in. Administrators can use a text editor (e.g. Notepad) to modify this configuration by editing the file:

       C:\Program Files\PaperCut\WebAdmin\includes\Config.inc

A summary of the options available is listed in the table below. See the comments in the file for further detail. All options are *enabled* by default.

Web Tools Control Option	*Description*
`gblnShowUserPrintLog`	Controls if standard users can view their print history
`gblnShowUserNetLog`	Controls if standard users can view their print history
`gblnShowUserTransactionLog`	Users can view their own transaction history
`gblnShowTransferOption`	Show the transfer function so users can transfer funds
`gblnEnableTopUpCards`	Enables the TopUp card support
`gblnAlwaysShowAdminLink`	Show the "quick like" option to the admin pages
`garrChargeTypes`	A list of "Other Charges" that will override the charges that come installed with PaperCut
`SetActiveLanguage("en")`	Allows forcing PaperCut web tools to use a particular language. If this setting is not set PaperCut will automatically detect the user's language from the browser settings.

> **Note:** *If your local language is not available, please email*
> *support@papercut.biz and we'll provide instructions on how to translate the*
> *interface.*

> **Note:** *If you prefer to not treat PaperCut credit as currency, you can tell*
> *PaperCut not display the currency symbol in the web tools. To do this, set the*
> *following the registry setting to 0:*
> *HKEY_LOCAL_MACHINE\Software\PaperCut\WebShowCurrency*

4. Configure File Permissions

The PaperCut installer will set the file permission correctly for most organizations, so will not need to be modified.

If you want people in addition to the Administrators group to have access to admin pages you will need to modify the permissions. If you do not want to modify these permissions you can skip to point 5: *Testing the Setup*.

File permissions must be carefully configured so to allow only users with adequate permissions access to account management functions. Log on as Administrator and configure the file permissions as follows:

Administration Pages
The following Administration pages should only be accessible to users who are allowed to perform user administration (e.g. Administrators, Admin staff, etc). **Normal users should not be allowed to access these pages otherwise they will be able to modify user credit, etc.**

```
C:\Program Files\PaperCut\WebAdmin\Admin.asp
C:\Program Files\ PaperCut\WebAdmin\UserList.asp
C:\Program Files\ PaperCut\WebAdmin\OtherCharges.asp
C:\Program Files\ PaperCut\WebAdmin\LogReport.asp
```

1. Read and Execute (or Full Control) permissions to Administrators (or other administrative group)
2. No privileges to any other normal users

All Other pages and files under C:\Program Files\PaperCut\WebAdmin
All other files should be readable by all users (administrators and your other users)

1. Read and Execute permissions to Domain Users (or other group that your users belong to)

PaperCut Databases

The PaperCut databases need to be readable and writable by all users.

```
C:\Program Files\PaperCut\Database\  &
C:\Program Files\PaperCut\Database\pcuserdb.mdb
C:\Program Files\PaperCut\Logs\  &
C:\Program Files\PaperCut\Logs\*.mdb
```

1. Ensure all users have full control (i.e. Users or 'Domain Users' have full control)

5. Testing the setup

Open a web browser on the print server (or another computer on the network) and connect to http://*PrintServerName*/papercut/UserList.asp . Where *PrintServerName* is the network name associated with the print server running PaperCut. A user list should appear. If requested, enter a username and password of a user with printing account administration access (as configured in step 3). If a blank list or a page error appears, check the file permissions configured (step 3).

We recommended that you try and access the page while logged on as a non-privileged user. Unprivileged users should be denied access to this page. If access is granted, check the permissions allocated to the `Admin.asp`, `UserList.asp`, `LogReport.asp` and **OtherCharges.asp** file in the WebAdmin directory.

Advanced Configuration & Customization

Often the options available in the **Config.inc** don't cover the full range of customization required. Many organization may want to fully integrate the PaperCut web tools interface into an existing Intranet or portal website. PaperCut's web tools interface is developed using Microsoft's Active Server Pages (ASP) technology. System Administrators with HTML experience should quickly be able to modify the look-and-feel of the web tools pages. Most colors and fonts are controlled via the **PaperCut.css** file and the **header.inc** file controls the header and logo layout. PaperCut Software Pty. Ltd. is happy for customers to modify the pages and/or use any of the code for customization purposes. *Please remember to take a backup copy of the pages as future PaperCut upgrades may overwrite the changes.*

PaperCut Software Pty. Ltd. is also able to assist customers with custom page designs if required.

11. Creating TopUp Cards

Overview and Definitions

TopUp Cards are generated using the **TopUp Card Wizard**. This is installed along side the PaperCut Admin Console or can be separately installed on another desktop system by running the standard PaperCut Installer program and selecting the "TopUp Card Wizard" option.

The TopUp card wizard integrates with Microsoft Word. Please ensure that Microsoft Word is installed before using the Card Wizard.

Before covering the creation process, understanding following terms will be useful:

Card Number:

> All cards are designated a unique number. PaperCut users this number to identify the card and its value. Users enter this number to allocate the credit to their account. And example number:
>
> P0409-1945-4833-5750-4452

Batch ID's:

> A batch ID is a user defined ID or number assigned to all cards in a batch. The batch ID will prefix all card numbers and are used to identify the source of a card. A unique number should be assigned to each batch.

Expire Date:

> Define the date on which a card can no longer be used. It's analogous to a "use by" date on a gift voucher. Expiry dates ensures cards only remain in circulation for a limited period of time. A six to 12 month period is recommended. In a school environment it may be useful to define an expiry date as the last day of semester.

Card Template:

> A template is used to define the look of all cards. Templates are designed using Microsoft Word and Word's main-merge functionality. The card wizard includes a basic standard template.

Mail Merge:

> Mail merge is an advanced feature of Microsoft Word. The mail merge feature takes a design template and a data source, and merges the two together to construct a

composite document. In the card wizard's case, the number list is the data source and the design template is the template Microsoft Word document.

Number Definition File:

The number definition file contains information on all cards in a batch including a list of card numbers, their expiry date, and value. The card wizard creates this file during the generation process and the system administrator will import this file into the PaperCut administration console.

TopUp Card Web Entry Page:

The TopUp card web entry page is a designated PaperCut included with the PaperCut Web Tools.

Using the TopUp Card Wizard

This section will walk you through the process of creating a batch of TopUp cards.

To create batch of 100 standard TopUp cards of $10.00:

Step 1 - Welcome

Open the **TopUp Card Wizard** from the start menu, and press **Next>**

Step 2 – Batch ID

Enter a unique **batch ID** to define this batch and click **Next>**. We recommend adapting a consistent convention. For example, choose numbers representing the date, or a sequential numbering scheme.
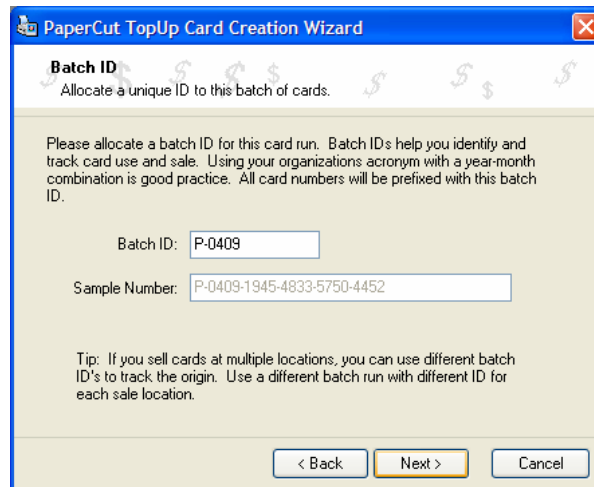

Figure 41: Entering a batch ID

Step 3 – Card Attributes

Ensure that the number of cards is setup to 100 and the value of each card is $10.00. By default the expiry date is set 6 months in the future. We recommend defining an appropriate date that corresponds to a fixed event such as the end of the year or budget year.

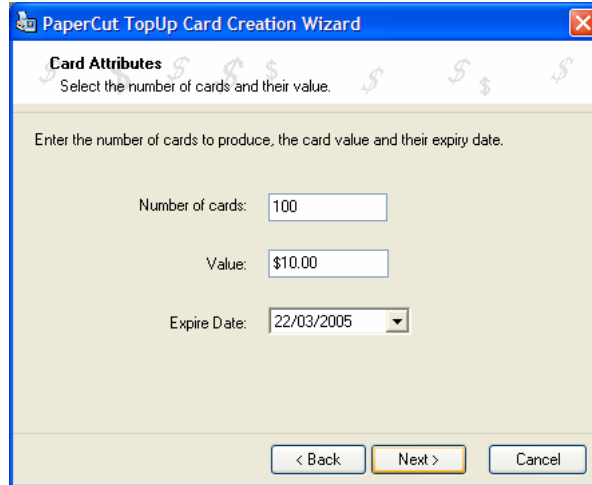*Figure 42: Defining card/batch details*

Step 4 – Design

To produce a set of standard PaperCut cards, custom design is not required. Simply click the **Next>** button to move to the next step. Modifying the custom design requires knowledge of Microsoft Word's mail merge functionality. See the "TopUp Card Tips" section for further details.
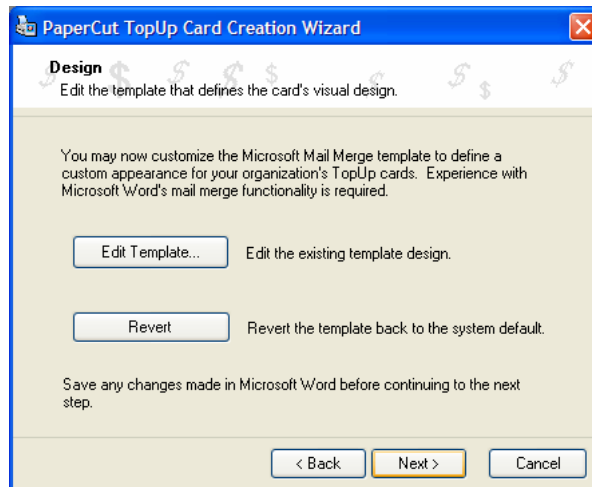

Figure 43: Options to edit the design custom cards

Step 5 – Generate Numbers

Press **Next>** button to generate the card numbers. The card wizard will prompt you for a location to save the "number definition file". Save the file on the local hard driver or a secure network drive.

Step 6 – Create Cards

The TopUp card wizard will now generate a merged Microsoft Word document. Before generating the Word document, the card wizard will ask you if Macro's have been enabled in Microsoft Word. If the answer is no, or you are unsure, please say "No" and the card wizard will guide you through the process of enabling Macros. The TopUp card wizard uses Word Macros to automate much of the card generation process.

Step 7 – Printing Cards

A new Microsoft Word document will open listing all 100 cards. The cards are standard business card size suitable for printing on heavy paper and cutting with a paper guillotine. For a professional look, consider forwarding a PDF version to your local printing shop. See the TopUp Card Tips section more ideas.
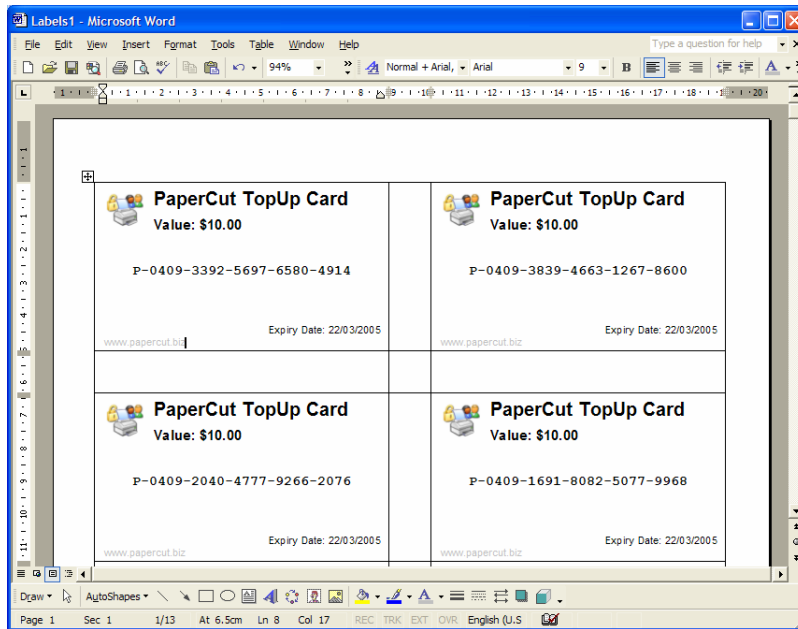

Figure 44: *TopUp Cards ready for printing*

Step 8 – Importing

The final step is to activate the cards by importing the number definition file in the PaperCut Admin Console.

1. Open the **PaperCut Admin Console** on the primary server.
2. Click the **Event Log** section

3. Select the **TopUp Card Log** tab.

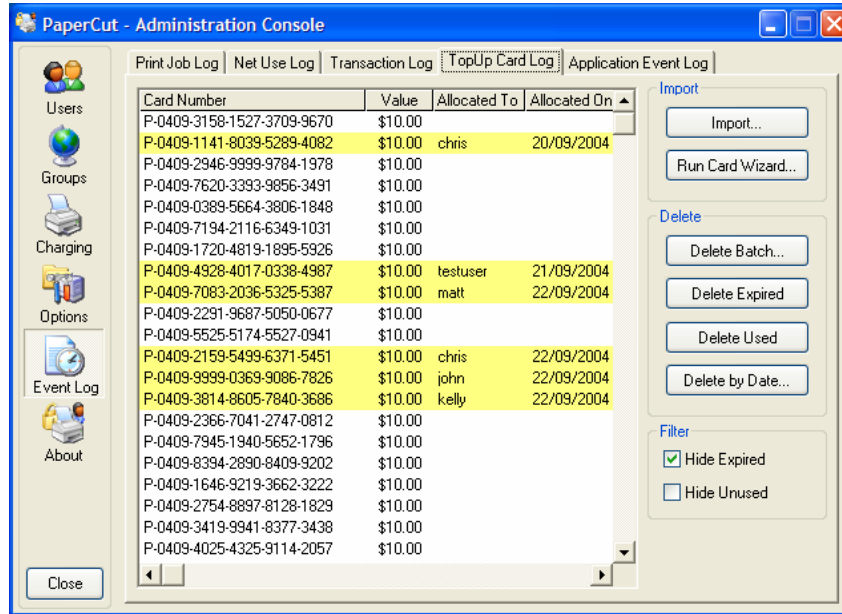4. Click the **Import…** button and locate the number definition file as saved in step 5 above.

Figure 45: *The card log listing imported and used cards*

Step 9 – Testing

It is good practice to test the TopUp card process by using one of the cards on a test user account. Remember to destroy the spent card used for the test.

TopUp Card Tips

Security

PaperCut's TopUp card system is designed with security in mind. All fraudulent card use attempts are detected, trapped and logged. The number allocation system is highly secure and guessing a number is statistically impossible. With 1,000 cards in circulation, the chance of guessing a number is 1-in-10,000,000,000,000, or in non-mathematical terms, it would take over 300,000 years to guess a number if a person enters one number every second!

Like many IT security systems, the weakest link in the system is the human interface. TopUp cards are a form of virtual currency. Care should be taken to protect the cards from unauthorized access and disclosure.

- **Ensure** the generated Microsoft Word document is deleted or saved in a security place after the cards are printed

- **Always** delete the number definition file after importing the batch into PaperCut

- **Never** leave the cards in an unsecured or visible location. Consider sealing cards in envelopes.
- **Check** PaperCut's application event log on a weekly basis for security messages. PaperCut will log and trap unauthorized card use.
- **Use** the TopUp card log to track card use and allocation.
- **Cancel** lost or stolen cards by batch number as soon as the problem is reported.

Cards Design

The **Edit Template…** button in Step 4 of the card wizard opens the standard PaperCut TopUp card template for editing. The card wizard is able to use any standard mail merge design. It's even possible to convert the template layout to letters rather than cards. Microsoft's mail merge support is designed for Word "power users". Consider taking the step-by-step mail merge tutorial provided with Microsoft Word help if you do not have experience with Word's mail merge functionality.

Consider keeping your customizations initially simple and work up towards more complex configuration.

To change the logo graphic:
1. Click the **Edit Template…** button in step 5
2. Say **yes** to *Enable Macros*
3. Select the standard *PaperCut logo* and press **Delete**
4. Select **Insert->Picture->From File…**
5. Locate the desired logo and click **Insert**
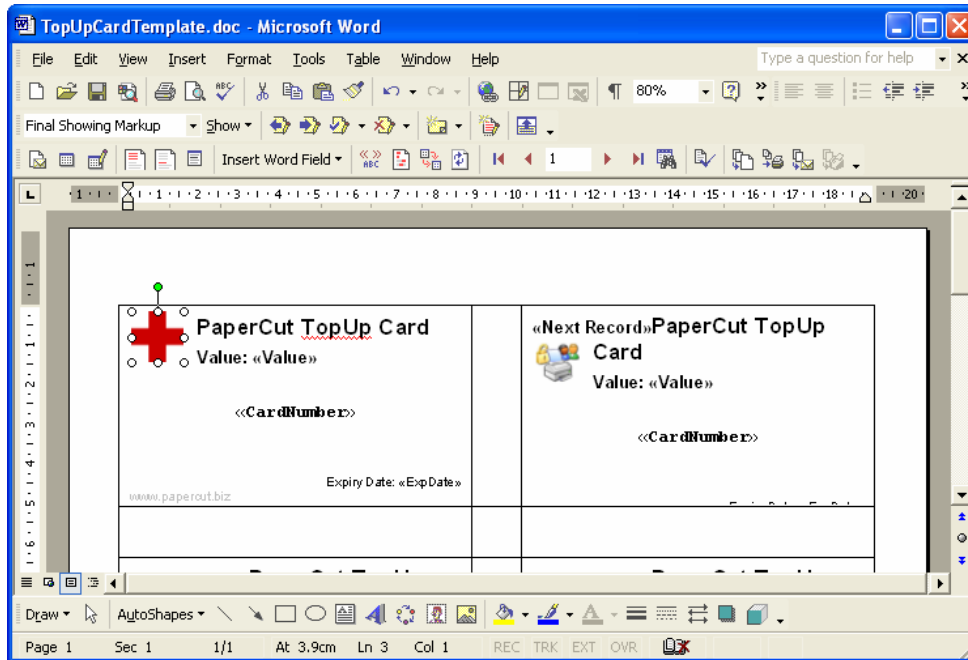
Figure 46: *Inserting a new logo on the card template*

6. Click on the "**Propagate Labels**" button on the mail merge tool bar. The new logo should propagate across all cards on the page.

Figure 47: *The Propagate Labels button*

7. **File->Save** and close Microsoft Word
8. **Test** the template by running a batch in the card wizard

Design Recommendations

- Consider changing the logo and adding your organization name
- Replace the www.papercut.biz URL with a reference to the PaperCut web tools TopUp card page or a suitable page on your internet site.
- Provide basic instructions on how to use the card or the location of an information page.

Additional Technical Information

- The Card Wizard uses a startup macro to automatically run the mail-merge operation. This macro should not be modified.
- A set of sample number data is provided in C:\Program Files\PaperCut\Templates\numbers.csv. By default this is set as the design data source.
- Available data fields available to the Mail Merge template are:

CardNumber	The unique card number
BatchID	The batch ID associated with this card's batch run.
ValueNumber	A numeric (float) version of the value of the card.
Value	A text version (currency format) of the value of the card.
ExpDate	The card's expire date.

Tips for TopUp Cards

- Consider allocating a different batch ID prefix to each sale location. This will help with tracking cards and identifying the origin of a card is fraud is detected.
- If an expiry date is not required, set the period to a very high value and remove the *ExpDate* field from the card template.
- Print and sample the first page before printing the whole batch.
- Keep an eye on Expire Dates and remove batches from sale prior to the expiry date.

12. Installing the User Inquiry Tool

The *User Inquiry Tool* is a simple program that provides network users with access to their account balance. Before installing the Inquiry Tool, we recommend that you ensure that network shares were setup appropriately during installation.

1. On your print server, located the sub-folder called "**Database**", usually found at C:\Program Files\PaperCut\Database.
2. Check that this folder has been shared as **PCDB$,** by right clicking on the folder and selecting Properties->Sharing Tab.
3. Locate the sub-folder called **PCSetup**.
4. Check that this folder has been shared as **PCSetup**

Since PaperCut version 5.2 there are two approaches to installing the *User Inquiry Tool*, either a Zero Deployment installation or a full installation using the PaperCut installer.

Zero Deployment Installation

Zero deployment is the recommended approach to install the *User Inquiry Tool* on network workstations. It has the advantage that no software needs to be installed on workstations and means that when PaperCut is upgraded all workstations will also be automatically upgraded.

For a detailed explanation of the zero deployment installation, see the "README.txt" file in the "C:\Program Files\PaperCut\PCSetup" directory.

NOTE: If the workstations are running Windows 2000 or later operating systems, then the User *Inquiry Tool* will not require any additional dependencies to be installed.

Installation using the PaperCut Installer

To install the *User Inquiry Tool* locally on the **network workstations**:
1. Logon to a network workstation (as a privileged user)
2. Locate the public share "PCSetup" on the server.
3. Run `pc-setup.exe`
4. When prompted to Select Components during the setup procedure, select the **User Inquiry Tool** option from the dropdown list.

   Tip: *If you have many clients, try automating the install process with SMS or logon scripts. The "Silent Install" section will be of assistance. PaperCut includes a sample batch file script to assist with the process.*

Automated installation of the User Inquiry Tool

If you have many network workstations, you may wish to automate the install process. The PaperCut User Inquiry Tool comes with a "Silent Install" mode which can be used for such schemes.

Silent Install (advanced)

1. Use "logon scripts", or equivalent, to map the share //Server/PCSetup to a **drive letter** on each network workstation.
2. Execute the batch file "client-silent-install.bat" on the <u>mapped</u> drive. Again, this can be automated with SMS or install scripts.

Additional Command Line Options:

Additional command line options can be specified by modifying the "client-silent-install.bat" batch file:

> **/VERYSILENT**
>> The installation progress window is not displayed. Error messages are shown.
>
> **/NORESTART**
>> Instructs Setup not to reboot even if it's necessary.
>
> /**DIR="x:\dirname"**
>> Overrides the default directory name displayed on the Select Destination Directory wizard page. A fully qualified pathname must be specified.
>
> **/GROUP="folder name"**
>> Overrides the default folder name displayed on the Select **Start Menu** Folder wizard page.

Client setup file

The **setup.txt** file in the PCSetup share contains default parameters that **PaperCut User Inquiry Tool** tools need. It was created automatically when the PaperCut was installed – it is found under the "PCSetup" directory under the PaperCut installation (usually c:\Program Files\PaperCut\PCSetup).

This file can be customize to suit your preferences. Configuration includes modifying the banner link, controlling credit limit warning messages, and whether the client tools should be shown upon startup.

The parameters in the **setup.txt** file are placed one a line each as shown in the following example:

```
PaperCutUserDBPath=\\KEATING\PCDB$\PCUserDB.mdb
MinimizeOnStartup=0
ShowLink=1
LinkName=About printing…
LinkPath=http://myserver.com/printing.html
WarnLimit=1.00
WarnMessageTitle=Low Account Balance
WarnMessage=%user%, you only have %credit% credit in your PaperCut account
WindowTitle=Account balance for %user%
WindowPosition=top-right
RefreshMinutes=20
```

Parameter	Description
PaperCutUserDBPath	The path to the shared User Accounts database
ShowLink	Whether to show the link in the banner of the client tools
LinkName	The name of the link that appears in the client tools. Default is "www.papercut.biz"
LinkPath	The url of the link displayed in the client tools. Default is "http://www.papercut.biz"
MinimizeOnStartup	Set to 1 to minimize the User Inquiry Tool to the windows icon tray on start. The user can open the tool by double clicking the icon.
WarnLimit	Display the text in *WarnMessage* when the credit drops below the value defined in this variable (shown no login).
WarnMessage	Text to display to the user when account credit drops under *WarnLimit*. Use %user% to insert the user's name in the message, or %credit% to insert their available credit.
WarnMessageTitle	The title to display on the warning message popup.
WindowTitle	Sets the window title of the User Inquiry Tool. Use %user% to insert the user's name in the title.
HideCurrencySign	Value: =1 to hide. Remove the currency sign from the popup display window. This is ideal for sites that don't want to portray an image of "charging" users. For example, you can work on a "numbers only" quota.
RefreshMinutes	The number of minutes to wait between automatically refreshing the balance. To avoid excessive polling on the server, this value cannot be set below 5 minutes.
WindowPosition	Allows the default position of the window to be changed. By default the window will be displayed in the top right. Valid values are: top-left, top-right, bottom-left, bottom-right.

For example, the link www.papercut.biz can be customized to point to your company's intranet page on printing and Internet procedures or the standard PaperCut Web Tools feature so users can click the link to view details of their account use and status.

Whenever you install the **PaperCut User Inquiry** Tool from the PCSetup share on your primary server, the setup.txt file is copied to the workstation and its parameters are used in the setup process. It is recommended that any customizations be performed *before* deploying the tool on

network workstations. The file can always be modified post-installation by locating it under the PaperCut Program Files directory.

13. Information for System Administrators

PaperCut is designed as a "self maintaining system". As a design objective our software developers aim to automate common tasks and minimize system administration overhead. Features include:

- Automated system maintenance tasks such as database re-indexing and optimization.
- Self applying security permission
- Automated user management including ability to define initial settings on new users
- Web tools so end-users can track and manage their own activity without the need for system administrator intervention.
- TopUp cards to assist with payments (the end-users perform the allocation on their own account in a secure and traceable way without the need for administrator access).

There is however a number of tasks system administrators should undertake post install:

Backups

System Administrators should ensure a suitable backup strategy is implemented and enforced. PaperCut stores all data under the directory:

> C:\Program Files\PaperCut\

This directory should be added to the overnight backup schedule. We recommend a rotation policy that provides a backup history ranging from one day to 6 months.

Important PaperCut data is stored in *.mdb files in Microsoft's Access 2000 file format. These files can be restored at any time provided the PaperCut system services are manually stopped. System administrators can also use Microsoft Access to manually inspect and merge data if required. PaperCut Software email support is always happy to assist with this process.

Log and Activity Monitoring

PaperCut keeps its own log of system events in the text file:

> C:\Program Files\PaperCut\Logs\event.log

This log can be inspected via the PaperCut Administration Console under the Event Log section. We recommend system administrations inspect the log daily for the first week after installation and weekly there after. System Administrators may choose to use a "log watching" program to detect and alert for events containing the text *ERROR* or *SECURITY*.

Automatic Synchronization with Active Directory

New domain users are automatically added to PaperCut the first time they print if a suitable *initial credit* rule is defined. Users may be manually added at any time via the "TuneUp" button under the Options section or this process can be automated via the provided batch file script under:

```
C:\Program Files\PaperCut\Scripts\addnewuser.bat
```

This script designed to run out of the Windows Event Scheduler. If automatic synchronization is desired, we recommend running this script automatically overnight. Please ensure the script is run with Administrators privileges.

Network Management

PaperCut Software is currently working on a knowledge base of information located at http://kb.papercutsoftware.com/ . If you would like to contribute information such as printer installation scripts, login scripts, or general network management policies that could be of assistance to other PaperCut users, please let us know and we will provide you with login details.

14. Installation Troubleshooting

PaperCut is not detecting jobs printed from a network client.

There are two possible causes of this problem:

- Users are not correctly logging on to your network domain. If the domain server does NOT authorize users, PaperCut has no way of knowing who submitted the print job. With system policies login onto the domain can be made mandatory, eliminating this problem. Alternatively printer permissions can be set on the print server to ensure only valid domain users may print to the printers.

- Alternatively the client computer may be configured to print directly to the network interface printer.   Ensure all network clients are configured as outlined in the PaperCut installation guide. All print jobs must pass through the print server running PaperCut.

PaperCut is not working after the installation. What do I do?

Try restarting the print server. The PaperCut service will be Automatically restarted and this resolves most installations issues.

I have set up a version of PaperCut for remote administration. I get a message informing me that I don't have Administration access to the user database.

This message will occur if **PaperCut** does not have Read/Write access to the user database. Check to see if the Database sub-folder has been shared with the correct permissions. The folder should be shared with **Read-Only** access to **Everyone** and **Full Control** to the users you wish to grant administration access. Also check the NTFS permissions on the pcuserdb.mdb file in the Database folder.

Every time I print to one of my printers, I get message in the PaperCut Event Log informing me that the printer language is not recognized.

<div align="center">***OR***</div>

Print is not counting pages correctly.

PaperCut currently supports Postscript, PCL, PCLXL and ESC/P2 printer languages. Most printers on the market support one of these languages. Some printers support a proprietary language, but also accept PCL or Postscript. In this case install PCL or Postscript driver. We recommend you try the following problem resolution actions in this order:

1. Install **Postscript** drivers if they're available for the printer. Do this on both the Print Server and all network clients. We recommend the Postscript language over PCL.
2. Try the drivers included with the Windows CD. PaperCut supports the majority of drivers distributed with recent Windows releases.
3. Read Appendix I

If your printer does not support PCL or Postscript, then check the PaperCut web site for an updated version of the "Page Counting Machine". We may now have support for your hardware and drivers. If you're still having problems, contact us at support@papercut.biz

15. Frequently Asked Questions

General

PaperCut screen-shots show a "$" currency symbol. My country uses a different symbol?

PaperCut fetches the currency format from the Windows Operations system "locale" settings. PaperCut will adapt to the regional settings configured under the Windows Control Panel-> Regional Options.

Are there yearly support or maintenance fees? What are the ongoing costs?

We do not charge for support or have an annual fee. Free email support is provided for both paying customers and customers on our "small networks free" license. Technically, we aim PaperCut at the intermediate network administrator. PaperCut is easy to setup and maintain. Problems are however always possible. If you do require assistance, please email us at support@papercut.biz and we'll be happy to help. All support emails are addressed within 24-hours.

Upgrades charges are another "catch" with many software applications. Some charge full price for upgrades, while others charge for even the smallest enhancements. PaperCut Quota's policy is as follows:

- Free upgrades for minor point releases (e.g. 4.0 to 4.1)
- Small upgrade fee for major releases. (e.g. Version 3.x to 4.0)

The upgrade fee currently stands at US$95. We aim for a major release every twelve months. Upgrades are always optional.

Can I install Paper Cut on a standalone system or peer-to-peer network?

Yes, as long as the system is running Windows 2000, XP, 2003 or Windows NT. In fact, if you have less than 5 users using this system, you can user PaperCut for free! When installing PaperCut on a standalone system or peer-to-peer system hosting a printer, when prompted in the Setup Wizard, select "Get User information form this computer."

What hardware is recommended?

Postscript, PCL or compatible networked printers are strongly recommended. Most printers now come with a built-in network card option. Printers without network cards can

be used with network interface boxes such as AXIS boxes or Netgear PrintServer boxes. These can usually be purchases for under US$100 . Parallel Port connections direct to either the print server or to network clients are also supported, however this is not the preferred option.

Will PaperCut slow printing?

Users will experience no notable slowing of normal print jobs. Very large jobs may experience a few seconds delay as the job spools to the print server.

What printers are supported?

PaperCut works PaperCut works with the majority of printers including printers supporting:

1. Postscript
2. PCL (all versions)
3. PCL-GUI
4. PCLXL
5. Epson languages ESC/P2, ESC/PAGE and ESC/PAGE-COLOR
6. Ricoh RPCS
7. Some support for proprietary GDI printers.

PCL is language supported by Hewlett Packard and many other printer manufacturers make their products compatible with PCL. We strongly recommend Postscript compatible printers and drivers if available.

Does PaperCut support different charging prices for color, duplex and different page size printing?

Yes. PaperCut supports a variety of charging techniques, including charging by specific page size (with different color and grayscale rates), page area charging, page size category charging, and discounts for duplex printing to encourage paper conservation.

The powerful print charging capabilities of PaperCut make it suitable for both simple (e.g. schools) and complex (e.g. design, architecture, engineering firms) applications.

I only want to monitor or charge a small number of users on my domain. Do I have to buy a license that supports all users?

PaperCut Quota: The license is based on the number of user logon accounts registered on the domain. PaperCut counts the number of users within the domain, and will prompt

you if you exceed your license quota. If you only intend to monitor a small percentage of your users, email us with your situation and we can arrange a special agreement.

PaperCut Enterprise: You'll only need to purchase licenses for the users who will print to monitored printers. (These are the users who will usually have the popup window installed.) Only these users should be added to the PaperCut Database.

To achieve this, you should create a new group on your domain called **PaperCut Users**, and add in the users you wish to use PaperCut.

Then if you're setting up PaperCut for the first time, in the Setup Wizard, when prompted where to import the list of users from, select **Get user information from network group** select the group **PaperCut Users**.

If you have an existing installation, and wish to only import users from the **PaperCut Users** group, run the PaperCut Administration Console, navigate to the Options tab and select **Get user information from network group**, and select the **PaperCut Users** group. Now click on the Database TuneUp button near the bottom of the screen. This will remove users that aren't in the group, and add all the users in the group. Now only your users from that group will be imported.

Installation

Can I upgrade/reinstall PaperCut and retain my user account values?

    Upgrading from Version 1.0 or 2.0 to Version 3.0:

1. Stop the PaperCut service in Start->Settings->Control Panel(->Admin Tools)->Services. Make sure you stop both "PaperCut Net Charging" and "PaperCut Print Charging" if they are running.
2. Copy the file C:\Program Fiels\PaperCut\Database\PCUserDB.mdb to an alternative location on your hard drive.
3. Uninstall the current version of PaperCut.
4. Install PaperCut 3.0 *(DON'T run it after the install)*
5. If your database is from PaperCut 1.0 then convert the database saved in step 2 to MS Access 2000 format as follows:
   - Open Access2000 and press Cancel on the open dialog box.

- Choose Tools->Database Utilities->Convert Database->To Current Version
- Select the database saved in step 2.
- Select a "Convert Database Into" location somewhere on your hard drive.
- Name the file PCUserDB.mdb

> **Note:** If you don't have Access 2000 installed on the print server, copy the PCUserDB.mdb file to another computer with Access and perform the above steps. If you don't have a copy of Access 2000, we would be happy to convert the file for you. Just email the PCUserDB.mdb file to support@papercut.biz

6. Copy and replace the newly converted database file with the empty database in C:\Program Files\PaperCut\Database
7. Start *PaperCut – Administrator Console* and follow the setup wizard.
8. Re-add your printers to the charging list and configure their cost per page.

Reinstalling or installing a minor "point release" upgrade:
1. Save the database file PCUserDB.mdb located in the "...**PaperCut**/Database" folder, to another location on your hard drive.
2. Uninstall the older version of **PaperCut** and install the updated version.
3. After the installation of the upgraded version and before running **PaperCut** for the first time, copy the saved database file back into the **PaperCut**/Database directory, replacing the empty new database with your existing one.
4. Run PaperCut and configure your printers and internet charging cost if applicable.

Why is it not recommended to use a PC as a network interface for a parallel port printer?
Any Windows computer maybe used as a network interface for a parallel port printer. This printer can be shared and then recaptured on the Network print server, then shared again. This arrangement works with PaperCut, as print jobs will pass via the print server. However, this arrangement is less secure than using a network printer, as a client can be quickly reconfigured to print directly to the interfacing computer, bypassing the print server and PaperCut.

The chance of a user bypassing the print server can be minimized with the following strategy (For Windows 9x Systems only):
1. Install the parallel port printer on the interfacing computer.
2. Share the printer with a secret invisible name such as **cantseeme$** (The $ will make it invisible to network browsers.)

3. Capture the printer on the print server by adding a new network printer with the UNC **\\computername\cantseeme$**
4. Share this printer on the print server to make it available to your network users.

Now a user can only reconfigure a client to bypass the print server if they know the invisible name.

Note: Connecting a parallel port printer directly to the print server is a secure method, and can't be bypassed. Network printers, such as "Jet Direct" printers are recommended, as Parallel Ports are very CPU intensive.

Operation

How do I assign credit to multiple users at once?

Try the **Allocate Funds …** button under **Group Level Functions** in the *Groups* section of the Administrator Console. This offers powerful credit assignment and privilege setting assignment on an NT group level basis.

How do I set all users to "unrestricted" ?

Try the **Allocate Funds …** button under **Group Level Functions** in the *Groups* section of the Administrator Console.

Can I prevent a user, or a group of users from printing on a particular printer?

Yes. PaperCut does not interfere with Windows permissions. You may restrict printing on any printer by setting share permissions in the printer properties. Other printers will function and be charged as normal.

I don't have MS Access installed on my Print Server. How do I use the reports option?

Try coping of the file "joblog.mdb" in the PaperCut program folder on the print server to a network workstation with Access 2000 installed. The copy will contain a snapshot of the data.

Advanced Operation

My Windows Event Log is full of printer pause messages from "Print". What is this?

PaperCut temporarily pauses all print jobs while they're analyzed. A message will appear in the event log if auditing of printer events is selected. To turn off printer auditing:

- Open the Printers folder in the control panel.
- Select **Server Properties** from the file menu.
- Under the Advanced section, turn off Log spooler information.

How can I prevent uses from bypassing the print server?

The only way to bypass the print server is to configure a client to print directly to a networked printer. Connecting to a network printer usually requires special setup software supplied by the hardware manufacture, and other information such as the printer's IP address. You should ensure that this software and information is not readily available to you network users. If "bullet-proof" security is required, investigate placing your printers on a TCP/IP subnet and/or configure routers to only forward TCP/IP packets from the designated Print Server(s).

The PaperCut database is lost/corrupt/overridden. How do I restore a backup?

First, try the following:

- **Stop** the **PaperCut Service** on the print server under Start->Settings->Control Panel->Services.
- **Open** each of the following files in **MS Access 2000** and choose Tools->Database Utilities->Compact and Repair Database… :
  - PaperCut/Logs/PrintJobLog.mdb
  - PaperCut/Logs/NetChargeLog.mdb
  - PaperCut/Database/PrinterDB.mdb
  - PaperCut/Database/PCUserDB.mdb

If the following actions do not fix the corrupt databases, PaperCut saves a dated copy of the database in the **PaperCut** program folder during the TuneUp process (*Options* section).   To replace the corrupted database with the latest backup:

- Close PaperCut and stop the PaperCut service using the **Services** console in the **Control Panel**
- Delete the corrupt database located at:
  Program Files**PaperCut**\Database\PCUserDB.mdb

- Copy latest backup file at: Program Files**PaperCut**\Backup\Backup*.mdb

  To: Program Files**PaperCut**\Database\

- Rename the database file to: PCUserDB.mdb

- Restart the **PaperCut** service

You may have other backup solutions operating on your print server and may wish to use this option to replace the corrupt database. Ensure the **PaperCut** service is stopped before replacing any `PaperCut*.mdb` file.

How do I upgrade my Page Counting Machine?

For more information see the following knowledge base article:

http://kb.papercutsoftware.com/Main/PageCountingMachine

16. APPENDIX I - Setting up printers

The printer setup process can be generalized in the following steps:

1. Setup printers on the server (the print server)
2. Installing the PaperCut software and add the printers to PaperCut's charging list
3. Share the printers
4. Configuring network clients/workstations to use shared printers

Adding Printers to the print server

Printers should be connected to the server using any one of the following connection methods:

1. Directly connected using USB or Parallel Port (LPT) cables.
2. Network printer (a printer with a build-in network card) connected as a "local printer" using a Standard TCP/IP Port or other port methods such as JetDirect.
3. Desktop printer directly connected to a workstation and "mapped" the to server using the process outlined in "Setting up Remote Desktop Printers" (Appendix II).

> *Note: existing USB or LPT printers can also be converted to network printers using hardware based print hubs (sometimes called print server hubs). Treat these printers are network printers and add using a Standard TCP/IP Port.*

It is important that all printers are setup as "local printers". Printers hosted on other systems connected to the server using the \\servername\printername *network printer* method will <u>not</u> work. Printers hosted on remote systems should either be re-setup and hosted on the central print server, or "mapped" using the process outlined in **Appendix II** *Setting up Remote Desktop Printers.*

In small network environments, it may be feasible to have the printers directly connected to the server using a USB cable. On medium to large networks it is more likely that a variety of connection methods will be utilized. Most high-volume printers now come with in-built network cards and use the common method of connecting via a "Standard TCP/IP Port".

For a step-by-step guide on how to setup particular prints see the following sections:

Adding a network printer

Applies to:

- Printers with their own network card
- USB or LPT printers "networked" using a hardware print hub

The process:

1. Log on to the server as *Administrator*.

2. Open **Printers and Faxes** via **Start->Settings->Printers**

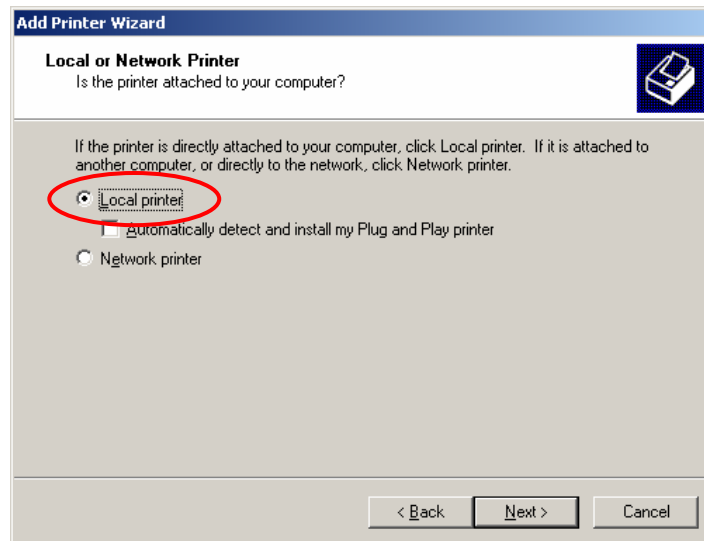3. Double-click **Add Printer** to open the Add Printer Wizard, and then click **Next**.

Figure 48: Install as a local printer

4. Click **Local printer attached to this computer**, clear the **Automatically detect and install my Plug and Play printer** check box, and then click **Next**.

5. Click **Create a new port**, and then click **Standard TCP/IP Port**.
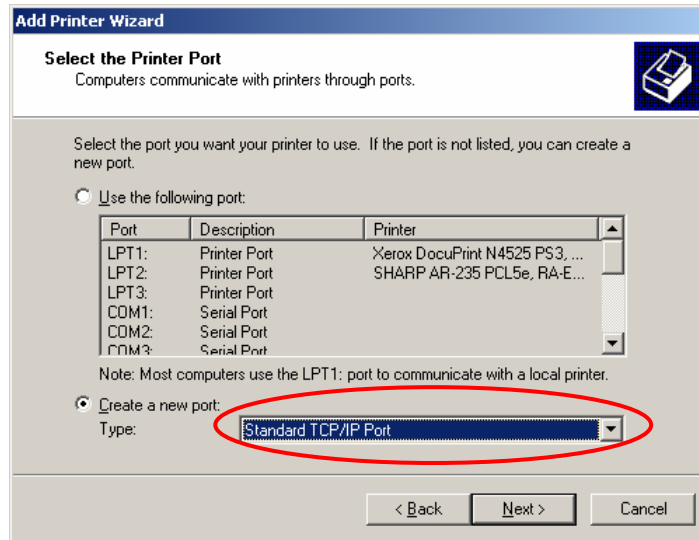
Figure 49 Select Standard TCP/IP Port

6. Click **Next** to run the Add Standard TCP/IP Printer Port Wizard.

7. Follow the instructions on the screen to finish installing the TCP/IP printer.

Adding a USB or LPT based printer

Applies to:

- Printers physically situated next to the server connected via USB or LPT cables

The process:

Option 1: Follow the printer manufactures printer setup procedure.

Option 2: Manually setup the printer using supplied drivers:

1. **Connect** the printer to the appropriate port on your computer according to the printer manufacturer's instructions.
2. Open **Printers and Faxes** *via Start->Settings->Printers*
3. Double-click Add Printer to start the Add Printer wizard, and then click Next.
4. Click **Local printer**, make sure that the **Automatically detect my printer** check box is cleared, and then click **Next**
5. Follow the instructions on the screen to finish setting up the local printer by selecting the printer port, selecting the manufacturer and model of your printer, and typing a name for your printer.

Adding Remote Desktop Printers

Networks tend to grow in a dynamic fashion and many organizations may have mix of printer scattered round the network. Some of these printers may be standalone (non-networked) printers connected directly to workstations. They are sometimes referred to as "desktop printers" or "peer printers". Desktop printers can be tracked by PaperCut using the following options:

Option 1: Connect the printer using the process outlined in the following Appendix II - *Setting up Remote Desktop Printers*

Option 2: Network the printer using a hardware print server hub

Option 3: Setup the system as a *Secondary PaperCut Server*.

Option 1 is commonly adopted and is suitable for many networks. Setup is however "fiddly"!
Option 2 is a simple and robust solution but does require the investment in additional hardware.
Option 3 should be considered if this system hosts a number of printers (e.g. 5 or more).

See the following **Appendix II** for further details on the suggested setup method.

17. APPENDIX II - Setting up Remote Desktop Printers

PaperCut is a server-based solution. It is important that all printers are hosted on a central server and print jobs are directed via this server. Desktop printers directly connected to a workstation (also referred to as "peer printers") do not fit this model. The following technique, although not the most direct solution, fulfils the requirements and allows desktop printers are mapped onto the central server ensuring documents are detected by PaperCut.

Technical Overview

This setup technique involves configuring the workstation to act as a "TCP printer port" exposing the printer to the network as if it had its own network card. The printer is then installed on the central print server as if it was a normal network printer and shared back to the workstation or other workstations. The technique uses the inbuilt Windows support for TCP printing also referred to as LPR/LPD printing support. Care should be taken to follow these setup directions in full. Repeat the process for each desktop printer throughout the network.

Exposed to server as using TCP/IP printing (as a TCP/IP Port)

Shared back as \\server\printer using standard sharing.

Windows print server
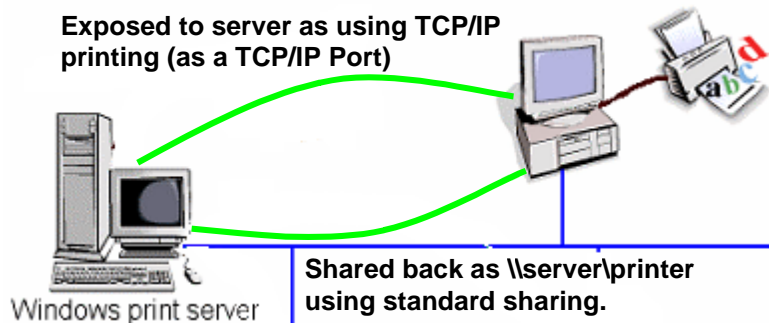
Figure 50 - Desktop printers exposed using TCP/IP Printing and captured on server

Setup Method

On the Workstation with desktop printer attached

Install TCP/IP print services:

1. Have the Windows installation CD on hand
2. **Log on** as a local *Administrator*
3. Navigate to **Start->Control Panel->Network Connections** or right-click on **My Network Places** and select *Properties…*
4. Select the menu **Advanced->Optional Network Components…**

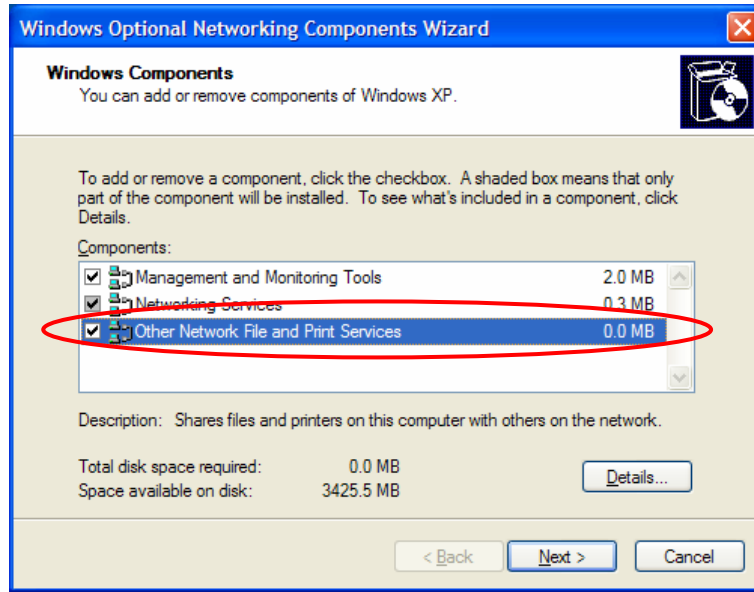5. Select **Other Network File and Print Services**

Figure 51 : Install TCP/IP print services

6. Click **Next** and **OK**.

7. Reset the system if request

8. Open *Start->Settings->Control Panel->(Administration Tools)->Services*

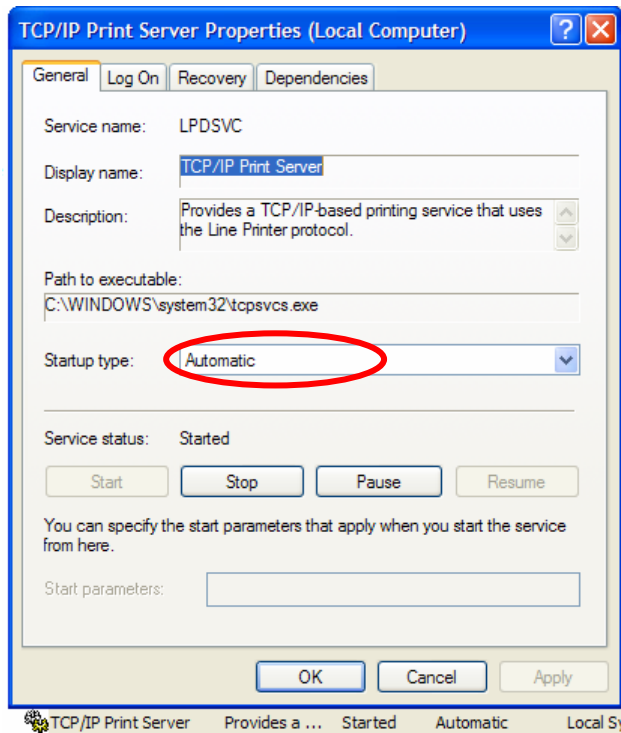9. Double-click **TCP/IP Printing Services** and set the startup type to **Automatic**.

Figure 52 : Set TCP/IP print server to start Automatically

Install printer and set permissions:

1. Install the printer using the manufactures install method or drivers (if not already installed)
2. Verify that the printer is **not shared** by right-clicking on the printer icon under *Start->Settings->Printers* and selecting **Sharing…**
3. Right-click on the printer icon under *Start->Settings->Printers* and select **Properties…**
4. Select the **Security** tab and **remove** the "*Everyone*" group. This will ensure that standard users logged onto the workstation do not have direct access to the printer. This ensures the user must print via the server.
5. **Rename** the printer giving it a short non-obvious name such as "PrinterPort".

Windows XP Firewall (only if running Windows XP):

1. The Windows XP SP2 firewall is now enabled by default and will block access to the printer. An exception rule must be defined.
2. Navigate to **Start->Control Panel->Network Connections** or right-click on **My Network Places** and select *Properties…*
3. Right-click on the network adaptor responsible for network communications and select *Properties*
4. Select the *Advanced* tab and click the **Settings…** Windows firewall button.
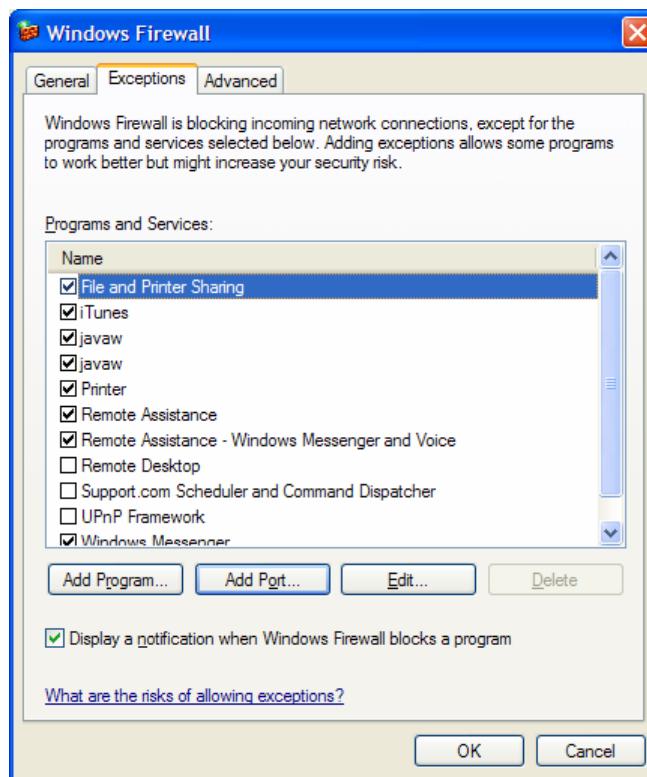
Figure 53: *The Windows XP Firewall Exceptions tab. Click the Add Port… button*

5. Select the *Exceptions* tab and click **Add Port…**
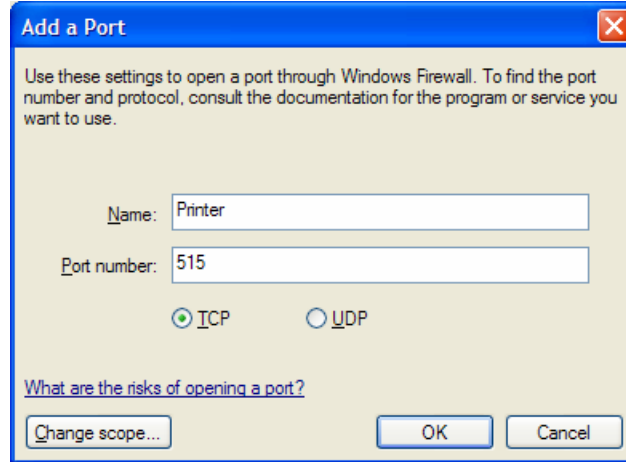6. Enter a name of *Printer* and a port number of *515*. Ensure *TCP* is selected. Click OK.

Figure 54: Adding a firewall exception on port 515

7. Click **OK**, the **OK** again to apply the change.

On the print server (server running PaperCut):

Install TCP/IP print services:

1. Have the Windows installation CD on hand

2. **Log on** to the server as *Administrator*

3. Navigate to *Start->Control Panel->Network Connections* or r**ight-click** on *My Network Places.*

4. Select the menu *Advanced->Optional Network Components…*
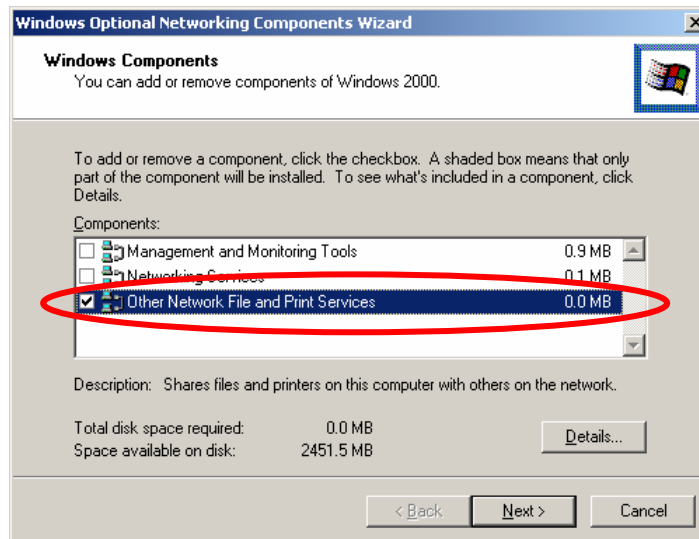
5. Select *Other Network File and Print Services*

Figure 55: Install TCP print support on the server

6. Click **Next** and **OK**.

7. Reset the system if request

Add the printer exposed to the network as a local server printer:

1. **Log on** to the server as *Administrator*
2. Invoke the **Add Printer** wizard from *Start->Settings->Printers*
3. Select *Local printer*
4. Ensure "*Automatically detect Plug-n-Play printers*" is not selected
5. Select *Create a new port* and highlight **LPR Port**
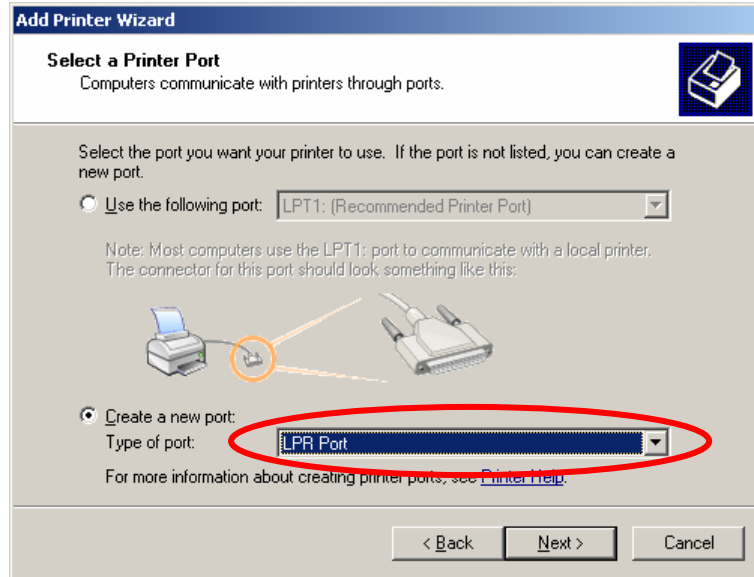
Figure 56: Select port type of LPR Port

6. Enter the name of the workstation hosting the printer and the name associated with the printer (step 5 in "Install printer and set permissions:")
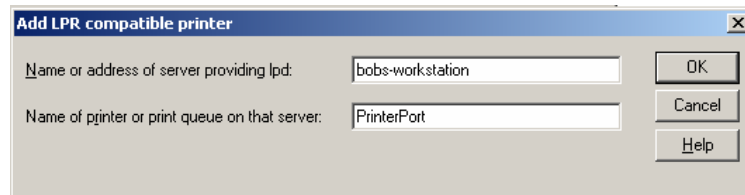
Figure 57: Enter the name of the workstation and printer previously setup

7. Complete the *Add Printer* wizard as normal.

Share the printer:

The printer can now be shared to all workstations/users (including the workstation originally hosting the printer) using standard Windows networking.

1. **Log on** to the server as Administrator
2. **Right-click** on the printer under *Start->Settings->Printers* and select **Sharing…**

3. Allocate an appropriate share name to the printer.

Add the printer to PaperCut and test:

1. **Open** the *PaperCut Administration Console*
2. Select **Charging**
3. Add the printer to the charging list via the **Select Printers…** button
4. Assign an appropriate cost.
5. Log onto a workstation, connect the shared printer, and print test documents to verify PaperCut is tracking printing.

18. APPENDIX III - Printer Configuration & Hardware Guide

The following guide should be used if any problems are experienced with the page count detection, or to check hardware compatibility. The latest version of this appendix is always available at:

http://kb.papercutsoftware.com/Main/SupportedPrinters

Page Description Languages (PDL's)

PaperCut will correctly handle printing for all printers that have drivers that conform to one or more of the following standards:

- Postscript levels 2, 3
- HP PCL4, PCL5, PCL5C, PCL5E or PCL6, PCLXL
- PCL-GUI
- Epson ESC/P2, ESC/PAGE and ESC/PAGE-COLOR
- PJL
- Ricoh RPCS
- Canon BubbleJet
- Some support for proprietary GDI printers (Minolta, QMS, Samsung, and others)

PaperCut may experience some difficulties with some proprietary GDI printers including "budget" LEXMARK and Brother printers. Some Brother printers however will work correctly if the Postscript or PCL compatible drivers are used.

Many printers come with a selection of print drivers. We recommend the installation of only a single driver - Postscript if available. The recommended drivers listed in *order of preference* are:

1. Postscript
2. PCL 6
3. PCL 5, 4
4. Appropriate driver selected directly off the Windows CD
5. Ricoh RCPS
6. ESC/PAGE and ESC/PAGE-COLOR

Connection Methods

Printers should be directly connected to the system running the PaperCut server software with one of the following methods:

- Direct LPT port connection
- USB port connection
- *JetDirect* network connection
- LP over TCP/IP
- Standard TCP/IP port via build in network card
- Standard TCP/IP port via hardware "print server" network hub.
- Using the method outlined in Appendix II

IMPORTANT: It's important that network clients are <u>NOT</u> configured to connect directly to the printer using one of these methods. The network clients should print to the shared printer shared from the server running the PaperCut software.

Unsupported Connection Methods

Some printers offer software that makes their systems interface with a Windows network using the LanManager protocol. This connection method can cause problems when the printer is "re-shared" from the server. In most cases, hardware offering LanManager connectivity, also support standard TCP/IP Port or LP over TCP. We recommend these connection methods over LanManager. Please consult your hardware documentation. In most cases using TCP involves adding a new "Local Printer" and selecting a standard TCP port.

Notes on individual printer models and manufactures

HP Laser Printers

PaperCut works with all HP Lasers produced over the last 7 years. Where possible, we recommend the Postscript drivers or recent PCL drivers.

HP Ink Jets - Deskjet

Most Inkjets work with PaperCut. Some older printers such as DeskJet 640C use nonstandard PCL and PaperCut can have problems analyzing documents printed from Windows 9X based clients.

Epson

The current range of AcuLaser, AL, and EPL mono and color laser printers work with PaperCut. The majority of inkjets produced over the last 7 years supporting ESC/P2, ESC/PAGE and

ESC/PAGE-COLOR will work. In some models PaperCut may not correctly detect paper size. The development team is currently working to address this.

Canon

Canon laser printers and copiers work with PaperCut. PaperCut may have issues with the low cost Bubble Jet printers.

Ricoh

PaperCut supports the current range of Ricoh laser and multi-function printers. Ricoh provide a number of print driver options including PCL, Postscript and RPCS (Ricoh's own language). PaperCut supports all drivers.

Kyocera

Kyocera lasers have a Postscript driver range referred to as KPDL. These drivers are compatible with PaperCut. The Kyocera PCL drivers occasionally use non-standard language extensions (they claim to be PCL compatible). The Postscript (KPDL) drivers should be used in preference.

Lexmark

The current range of mono and color laser printers work with PaperCut. Postscript drivers are recommended. The "budget" inkjet printers use a proprietary GDI printer language and depending on the model, problems may be experienced.

Minolta-QMS

All high-end lasers work with PaperCut. Use the Postscript driver option.

OKI

The OKI mono and color lasers support a number of print languages in compatibility mode. We recommend the Postscript Level 2 driver option.

Xerox/Tektronix

The DocuPrint and Phaser Series accommodate PCL and Postscript. Use the Postscript drivers if available. Some lower end DocuPrint systems only support PCL. We recommend the PCL6 drivers.

# 19. APPENDIX IV – Proxy Server Setup

Quick Setup Guide for ISA Server 2004

This setup up guide does not intend to be a full setup guide to ISA Server 2004, but provides the minimum steps involved to get ISA set up to work with PaperCut Net Charging.

1. Install ISA Server 2004 from the installation media as per ISA Server installation documentation

2. When prompted for your internal address ranges, make sure you accurately specify all IP address ranges that your internal network uses.

3. Open the ISA Server management console (Start->Program Files->ISA Server->ISA Server Management Console)

4. On the left menu select the Monitoring Node of your ISA Server, and select the "Logging" tab.

5. On the right hand side of the logging pane, select the "Configure Web Proxy Logging" option. (see below)
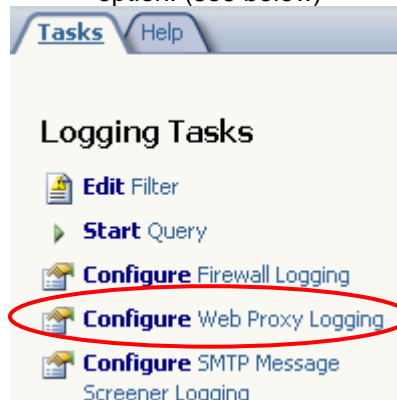
6. Select the "File" logging option and ensure the "W3C extended log file format" is selected
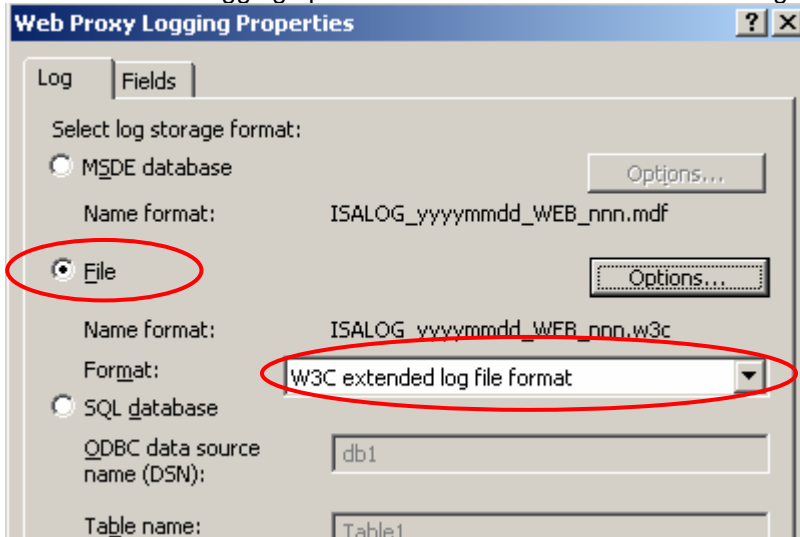
7. Click the "Apply" button to enable the W3C log format
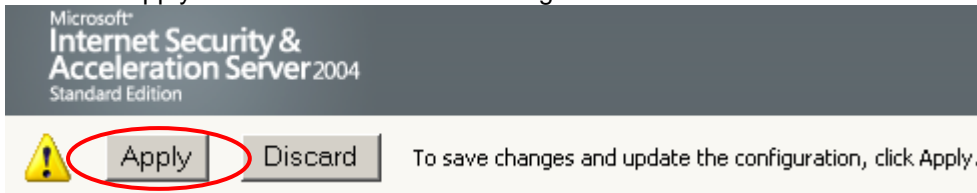
8. Check that the web proxy server is enabled for your internal network by selecting the "Firewall Policy" node on the left, and opening the toolbox on the right, and opening the properties for the "Internal Network under "Toolbox->Network Objects->Networks"
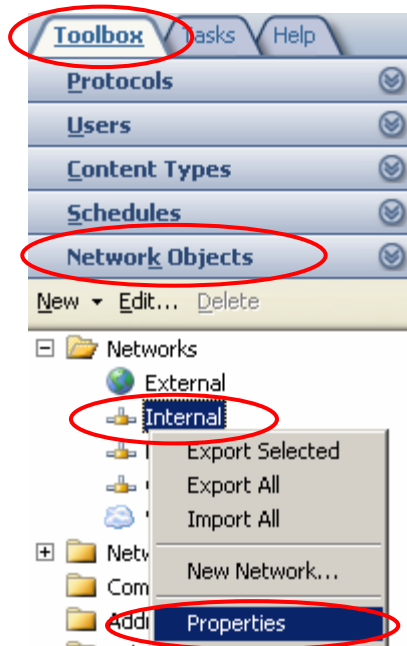
9. On the "Web Proxy" tab, ensure that the HTTP proxy is enabled
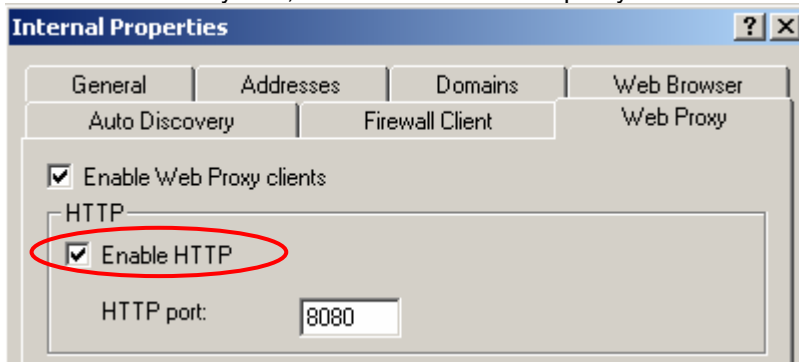
10. Define a new "User Set" that will define the list of users that we want to restrict access to. To do this select "Toolbox->Users" and select the "New" button
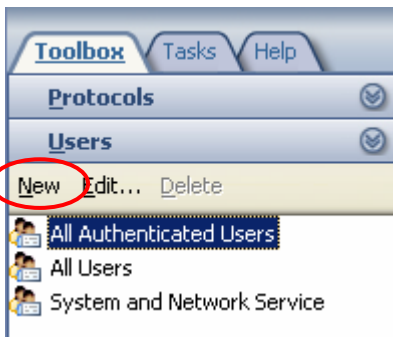
11. Define the User Set name as something meaningful like "PaperCut Internet Users" or just "Internet Users".

12. When prompted for the Users that belong to this user set, press "Add" and select "Windows users and groups".


13. Select the Windows security group that you defined for PaperCut to use when allowing/disallowing internet access based on the users credit (See Page 33 for details of configuring this group within PaperCut)
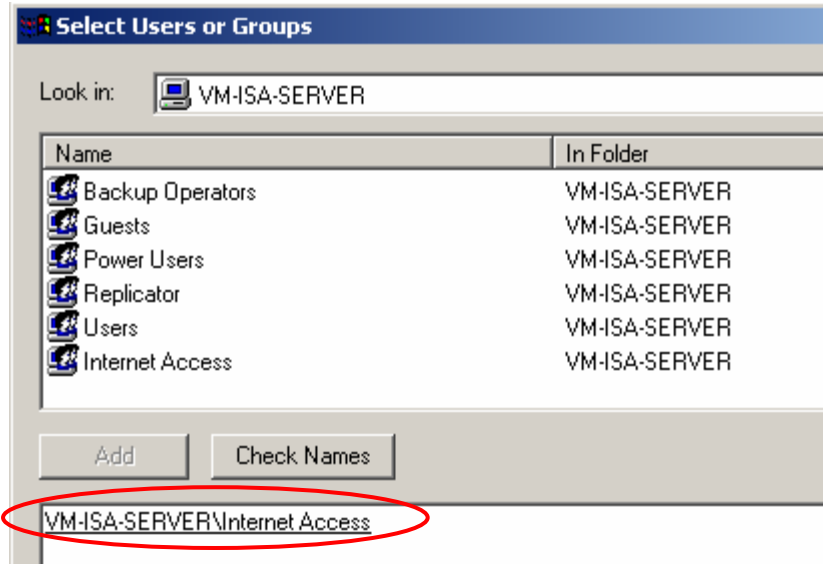
14. By default ISA server disallows all traffic, so a rule need to be defined to allow users to access the Internet if they belong to the "Internet Access" Windows security group defined for use with PaperCut Net Charging. (See Page 33 for details of configuring this group within PaperCut)

15. On the Firewall Policy screen, select the "Create New Access Rule" from the "Tasks" pane on the right


16. Give the access rule an appropriate name. For example "PaperCut Internet Access"

17. Select "Allow" to indicate that matching this rule allows access

18. When prompted for the protocols to allow, select "Selected protocols" from the list, and add the "HTTP" protocol to the list.
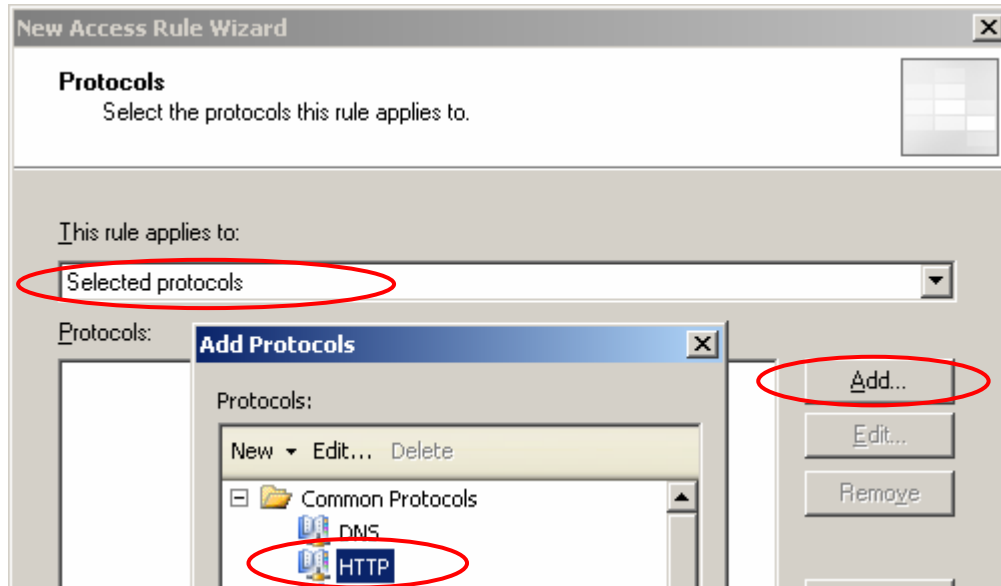
19. Then when prompted about which sources this rule applies to select your internal network.
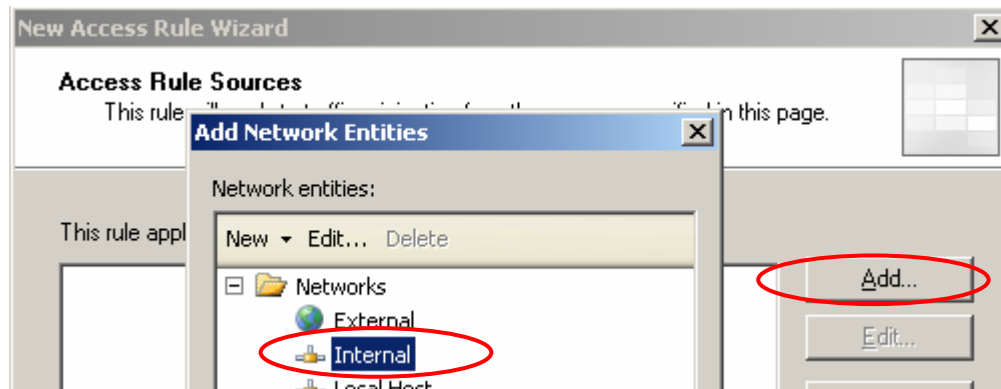
20. Select the "External" network for the Access Rule Destination.

21. When prompted for the "User sets", select the previously defined "User Set" that contained the PaperCut Internet Access Windows group. Also make that "All Users" is removed from the "User Sets" otherwise all users will be able to access the internet, regardless of whether they belong to the "Internet Access" Windows group.

22. Press "Finish" to complete the definition of the Access Rule.

23. Click the "Apply" button to enable the changes to the Users Sets and Access rules.
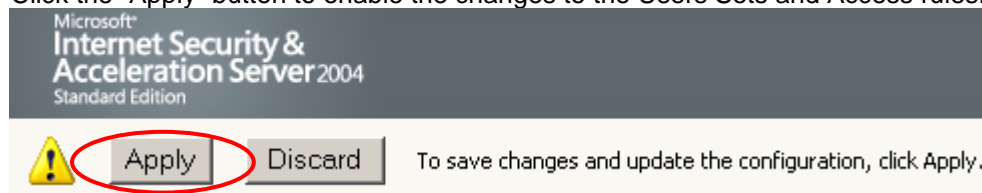
24. In the PaperCut Administration console, make sure that the Net Charging is setup to point to the ISA log files (C:\Program Files\Microsoft ISA Server\ISALogs). This is shown in the screen shot below.
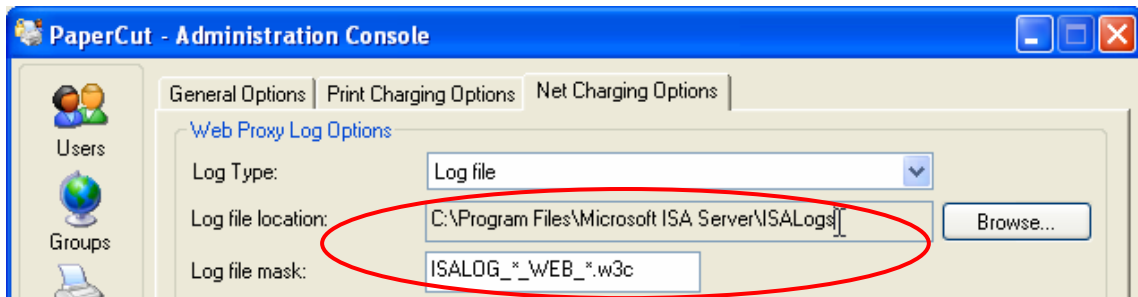
Setup Guides for Other Proxies

PaperCut works with the following additional proxy servers:

- Microsoft Proxy (now discontinued and replaced with Microsoft ISA server)
- Squid on Linux and Unix
- FreeProxy (tracking only – no access enforcement)
- Wingate

The PaperCut software development team is in the process of putting together a detailed guide on configuring the Squid proxy server to authenticate with Windows. The current version can be found in our Knowledge Base at:

http://kb.papercutsoftware.com/Main/ConfiguringSquidProxyToAuthenticateWithActiveDirectory

Existing experience and a good working knowledge of Unix and Squid is helpful.

18. APPENDIX III – Miscellaneous Information

Network shares created during install

- **PCSetup** - Read Only Visible Share. This share maybe removed at any time without upsetting PaperCut. It's provided to assist with network workstation installs.
- **PCDB$** - Read Only Invisible Share. The User Inquiry Tool user this share to extract the user's current account balances.
- **PCDBA$** - Administrator Only Invisible Share. This share allows PaperCut secondary servers to access and write to the shared user accounts database. This share can safely be removed if secondary servers are not employed.
- **PCLogs$** - Administrator Only Invisible Share. Used by PaperCut's automatic log importing process.

PaperCut Service command line options

The PCService.exe and PCNetCharge.exe executables run as Windows Services. The Services maybe uninstalled from the system services list with the following command line options:

Uninstall

- PCService.exe –uninstall
- PCNetCharge.exe –uninstall

NOTE: Please ensure that services are stopped before uninstalling.

Install

- PCService.exe –install
- PCNetCharge.exe –install

Further technical information?

The PaperCut development team is always happy to assist customers with further technical questions. Please feel free to email us at support@papercut.biz.

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