Print-Limit
User Guide

Instructions for Installing and Using Your Print Management Software

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About Print-Limit 6.0

Print Management Software for Windows Networks

Print-Limit is a print charging, quota, and monitoring system for Windows networks. It was developed to meet the need in schools to minimize waste and promote the responsible use of IT resources. **Print-Limit** is a one-stop solution for implementing a user-pays system, quota restrictions, or silent logging of printer use.

The installation and use of Print-Limit will:

- Transfer accountability to users.
- Create responsibility and environmental awareness.
- Reduce overall printing cost.

Features

- Includes a print management system that allows different costs to be associated with each printer, color printers, different page sizes and more.
- Works with common laser and inkjet printers.
- Able to detect and delete duplicate print jobs and filter documents by type, cost, or size.
- Monitors users on both an individual and group basis.
- Able to automatically stop printer access for users with insufficient credit or quota.
- Easy, fast, and simple administration.
- Automatically schedules credit to users to encourage budgeting.
- An advanced Web Tools interface provides user administration using a standard Web browser.
- Provides an automatic user account creation, which minimizes system maintenance.
- Automatic synchronization with Active Directory user lists.
- Synchronize with Active Directory Org Units and Nested Groups.
- A wizard manages common installation to print server.
- Integrates into Windows NT and Windows 2000 users and groups environment.
- Reports detailed print job information.
- Performs queries and generates customizable reports.
- Microsoft Access database integration
- Remote administration through Web browsers.
- Upgradeable Page Counting Machine allows for future printer and hardware support.

Possible Implementation Scenarios

The following scenarios outline two ways in which you can use Print-Limit. Print-Limit is a flexible program. You can use it to implement a 100% user pay system, promote responsible printing, or simply audit your organization's printer use.

The School

Goal

A school wants to minimize waste, and promote economic and environmental responsibility within the student population. A secondary aim is to budget printing costs by assigning print limits across the faculty, as is commonly done with photocopying.

Strategy

- All printers are shared through the print server and assigned costs.
- Staff members receive a printing allowance and an unrestricted Print-Limit account.
- Students receive a small initial allowance and a restricted Print-Limit account.
- Credit is added to student accounts at regular intervals, such as at the beginning of term.

You can give students part of their annual printing allowance at the start of the year and distribute the remaining credit at regular intervals, either manually or using the scheduler. This approach prevents students from spending their year's printing use in a short time. Students who run out of credit can receive an advance on their credit or purchase more credit.

Staff should be informed that they have been allocated their yearly budget and their accounts are unrestricted; Print-Limit will not deny their printing access. Faculty groups can monitor their department expenditures using the query function.

Install the User Inquiry Tool on all network clients to inform both students and staff of their account balances. If students can purchase printing credit, it may be useful to install a second remote copy of the Print-Limit Administrator Console on another computer in your Accounts office or to grant the office staff access to Print-Limit Web tools.

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 printer's manufacturer. You can also use Print-Limit's load analysis feature to determine costs.

The Business

Goal

A business wants to transfer the responsibility of printing costs and budgets from the IT Department to the individual departments or users. The goal is to track expenditure and audit all printing; the business does not want to restrict printing.

Strategy

- All printers are shared through the print server and assigned costs.
- Accounts are assigned to Windows groups according to their departments.
- At the beginning of a budget period, user accounts are set to zero. These accounts are 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 costs are recorded during the budget cycle. You use the query function to calculate the printing cost specific to each department. With this accurate audit, printing budgets can become the responsibility of the individual departments. Department management can set their own budgets and control departments printing costs.

Tip: Avoid overlapping group members. Keep network groups mutually exclusive to avoid confusion with permissions and queries. This prevents duplicate payments for scheduled funds.

About This User Guide

This manual covers the installation, administration, and use of Print-Limit. The first section of the guide covers program installation and common procedures. The second section includes information on advanced charging options and program maintenance.

Note: This guide assumes that the reader has Windows networking experience.

1. Setting Up Your Print Server and Installing Print-Limit

This section covers the basic installation of Print-Limit 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. Basic to intermediate knowledge of Windows networks is needed to install Print-Limit.

Network Configuration

To accurately track print jobs, Print-Limit requires network clients to use a Windows print server. If your network currently uses a Windows print server, you should install Print-Limit on this server. It is likely that you will not need to make any modifications. Follow the instructions below if you do not have shared printers installed on the print server.

Note: We recommend that you configure one or two printers and users before you reconfigure all of the printers and users on the network.

Configuring the network to use Print-Limit printers:

1. Connect or capture all network printers on a Windows NT, 2000, XP, or 2003 server. For more information setting up printers, see *Appendix I—Setting Up Printers*.
    1. Share the added printers.
    2. Configure network clients to print to the shared printers on the print server.

This configuration ensures that all clients print through a Windows Print Server. Clients that are configured to print directly to printers cannot be controlled by Print-Limit.

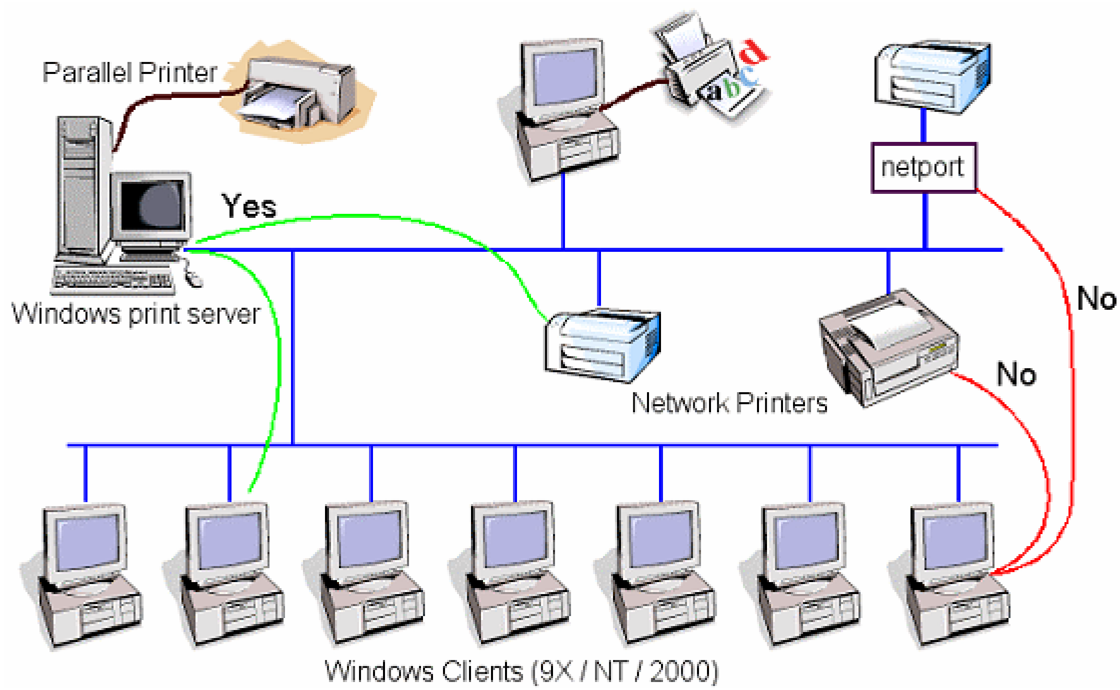


Figure 1: *This network diagram includes clients, a print server, and printers.*

Printing via a print server allows Print-Limit to intercept print jobs and charge users accordingly. A print server is a system on the network that is responsible for centrally hosting print queues and sharing these queues as network resources (which can be viewed in My Network Places). We recommend that you host printers on a server to manage printers in a network environment. It ensures printers are centralized on a single system and provides management benefits, such as centralized queue management and permission and driver management. A print server does not necessarily have to be a server dedicated to printing. In many cases the print server is the existing domain controller or file server.

You can use a domain controller as a print server, although for large networks we recommend that you use a separate server for this task. Often an existing file server fits this role well.

Print-Limit works by integrating with the print server to intercept print jobs as they pass through the queues. Print-Limit can handle hundreds of printers on a single server; most networks need only a single system dedicated to this task. Print-Limit can handle a multi-server environment if legacy or network configurations require it to do so.

Connecting printers to the print server

You can connect printers to the print server in a number of ways. Network connected printers (printers with their own network card) are generally recommended. Add these printers as local printers using a Standard TCP/IP Port. See *Appendix I—Setting Up Printers* 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 the printer icon and select **Sharing**.
2. On the **Sharing** tab, select the **Share this printer** option and assign an appropriate share name.

Configuring Network Clients or Workstation to print to shared printers

You can configure a printer on your network clients by adding a new network printer.

1. Open the **Printers** folder in the **Control Panel**.
2. Double-click **Add Printer**.
3. Start the **Add Printer** wizard and select network printer as the printer you want to add.
4. Locate a shared printer on your print server and complete the wizard. The drivers are downloaded and the printer is installed.

Installing Print-Limit

Note: If you are upgrading your version of Print-Limit, please refer to the “Standard Upgrade Process” on page 73 for instructions on how to save existing information about your user balances, printers, print logs, and PrintCards.

- Before you install Print-Limit ensure you are logged on as a user with administrator privileges.
- After running the install program, you may be asked to restart your computer. Before you continue, make sure that restarting your computer will not upset your network users.

After installation, select Print-Limit from the Start menu. The Print-Limit setup wizard appears. This wizard asks a few questions about your network configuration, and configures Print-Limit accordingly.

Setup Wizard Screen: Installation Options

You can install Print-Limit on network print servers or proxy servers for remote administration of user accounts. Select the **Print Server** option to configure Print-Limit to monitor the printers attached to this print server.

Setup Wizard Screen: Network Configuration

Print-Limit must query information about your domain users. This user information can be queried in two ways: **Standard** and **Active Directory**. The option to choose between these two modes appears when you install on a computer in an Active Directory domain. If the computer is not in an Active Directory domain, Print-Limit uses **Standard mode**.

Standard Mode

Standard mode supports NT mode domains and non-domain based Windows networks. Standard mode also works in Active Directory domains; however, it does not support importing users from organizational units and nested groups.

For normal network configurations, select **Get user information from the Primary Domain Controller**. Print-Limit calls the main server on your network to request a network user list.

If you install Print-Limit on a standalone Windows NT, 2000, XP based system or on 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 third option.

Active Directory (including Organizational Units and Nested Groups)

The native Active Directory support is recommended in Active Directory networks that 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 (for example, First Year Students, Second Year Students). Using Active Directory nested group, you can create a group named All Students that just contains both groups.

Testing the Installation

After initially configuring Print-Limit, the user list appears in the main window of the **Print-Limit 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.

It is important to test Print-Limit after you configure it. We recommend that you print test documents on all your printers from a number of different network clients. Verify that the page counts in the user list and printer list correspond to the number of pages printed. 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 that you inspect the Print-Limit Event Log after printing the test documents. If Print-Limit does not recognize the printer language for any one of the printers a message appears in this log.

2. Advanced Print-Limit Setup

Note: These setup instructions require an intermediate to advanced knowledge of Windows networks. We recommend that you install Print-Limit to a single server and become familiar with its features before you proceed to a multiple print server installation.

Domains with Multiple Print Servers or Separate Print and Proxy Servers

On a large network it may be 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. You can install Print-Limit on a number of servers and configure it to use one central database (the primary database).

What is a central database?

A central database is a single Print-Limit database file located on your domain. Whenever a user prints via any printer attached to any print server, costs are deducted from the user’s account stored in this central database. It’s like a bank account in that you can visit several bank braches, but your deposits and withdrawals applies to a single account. This central database is referred to as the **Print-Limit Primary Database**.

When do I use a centralized database?

If users regularly print on different printers shared under different print servers, you should consider a centralized database. This ensures all costs incurred by users are stored under the one account. We recommend that you limit up to five servers per database.

Is this always required?

If users use only 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 use only the printers in their office or building. In this environment, install Print-Limit on each print server as outlined in the section *Setting Up Your Print Server* on page 6.

How to install Print-Limit on multiple servers

Installing and configuring multiple print servers (or proxy servers) running Print-Limit to use a central database is a simple process:

1. Install and configure Print-Limit on one of your print servers. Follow the instructions as outlined in “Installing Print-Limit”.
2. Open Windows Explorer and locate the Print-Limit subfolder called Database. You can usually find this at C:\Program Files\GenevaLogic\Print-Limit\Database.
3. Right-click the folder and select **Properties.**

4. Select the **Sharing** tab and click the **Permissions** button.
5. Verify that the folder is shared as PCDB$ and PCDBA$.
    - PCDB$ should be a read-only share.
    - PCDBA$ share should have full control access to the Administrators group.
6. Install **Print-Limit** on your second print server or proxy server.
7. When the installation finishes, start the **Print-Limit Admin Console**.
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, enter a username and password for a user belonging to the Administrators group. Print-Limit needs this account to gain access to the central database located on the primary server.
    - Start User Manager.
    - Add a new user named Print-Limit 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 the section *Installing Print-Limit* on page 8.

Secondary Server Considerations

All activity logging such as print job logs and transaction logs is undertaken locally on the server. Only the user account information (for example, user 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, Print-Limit logs all data to local files on the server. For reporting purposes, Print-Limit offers the option to merge logs from multiple servers into the one database on the primary server. You can start this operation manually or create a schedule task to start it automatically, for example, you can schedule it to run overnight or on weekends. The merged log information is automatically made available to Print-Limit’s standard Microsoft Access reports and the Web tools including the Web reports.

The import process works as follows:

1. The primary server detects the name of all secondary Print-Limit servers located on the network.

3. Each server is accessed and the Print Job Log and Transaction Log databases are collected via an administrator-only share called PCLogs$.
4. Data is extracted from each log and merged into the primary server's local logs.

Tip: For performance reasons, we recommend 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 Print-Limit server.
2. From the console, click the **Event Log** icon.
3. Click the **Import** button located on the **Print Job** or **Transaction Log** tab.
4. Select the option **Manually import data from a log file** and, if necessary, select a file format from the list. Click **OK**.

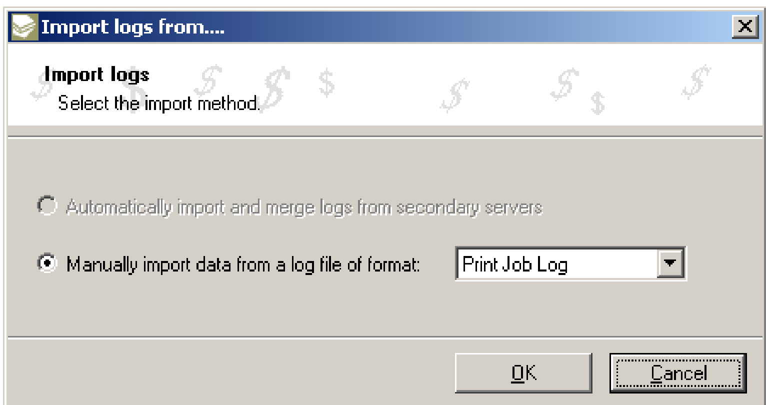


Figure 2*—Importing logs from secondary servers.*

5. Locate the Access database file (*.mdb) that you want to import.
6. Inspect the status window for any errors or information events.

To schedule the automatic importing of secondary server logs

Print-Limit provides a batch file located under the directory:

```
C:\Program Files\GenevaLogic\Print-Limit\Scripts\importlogs.bat
```

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

For more information on Windows scheduled tasks, refer to the Help topic on how to schedule a new task in the Windows Help and Support Center, which is available from the Start menu.

3. Navigating Print-Limit

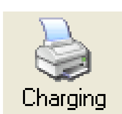
The Print-Limit Administration Console is divided up into six sections: Users, Groups, Charging, Options, Event Log, and About. To view each section, click its icon on the navigation bar located on the left side of the window. The options available under each section are as follows:

Users

- View the credit in each user's account.
- View the total number of 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 his or her allocated funds.
- View a user's printing history.

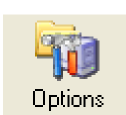
Groups

- Assign funds to members of a domain group at one time.
- Query information about group members, such as the number of pages the group has printed.
- Set rules that govern the initial credit assigned to any new user added to the network in the future.
- Schedule tasks to add credit to user accounts at regular intervals.



Charging

- Select the cost you want to charge users to print.
- Set the cost per page for selected printers.
- Set filter rules and restrictions on selected printers.
- View the total number of pages printed on each printer.
- List recent print jobs and printing history.



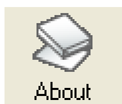
Options

- Set your printing charging configuration.
- Perform maintenance on the Print-Limit user database.
- Set system defaults.
- Customize the messages that appear when users exceed their credit limit.

Event Log

- View a detailed log of print jobs.
- View detailed transaction logs to see a full audit trail credit changes.
- View Print-Limit application events and status.
- Import usage logs from secondary servers.
- Import, administer and track usage of PrintCards.
- Export detailed printing information to Microsoft Access or Excel.
- Run customizable Print-Limit reports.

About



- View licensing information.
- View version information.
- Enter you license or registration key.

4. Basic Operations

Setting Printer Cost

To begin charging for jobs printed on a particular printer you must do the following:

1. Add the printer to the charging list.
2. Set the cost per page for the printer.

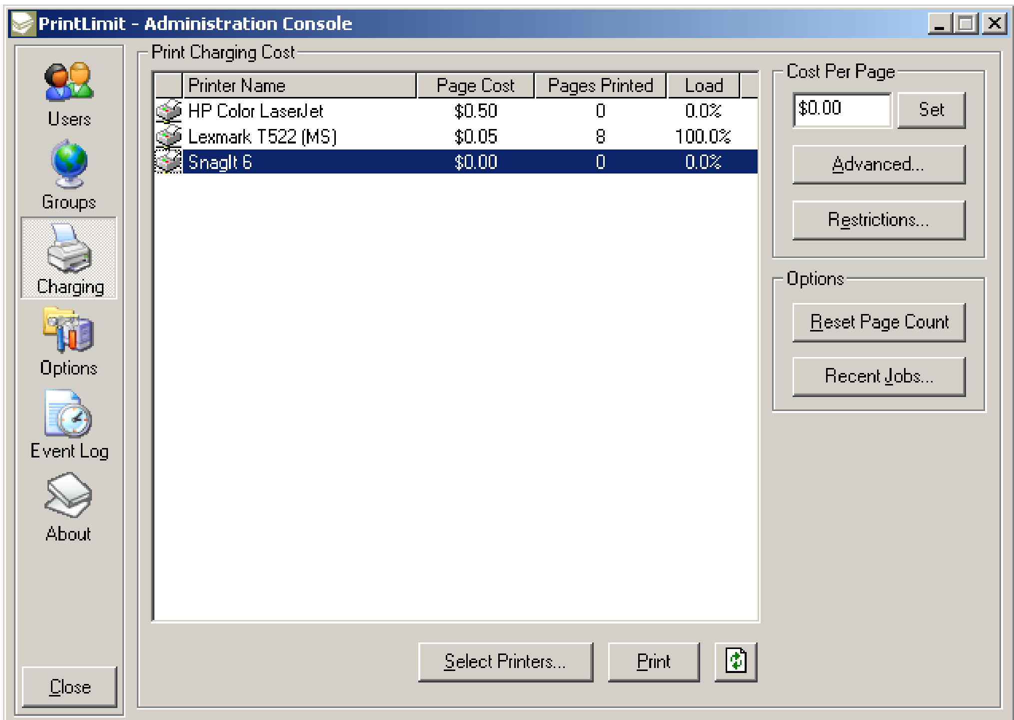


Figure 3: *The Charging section controls the cost of printing.*

To add a printer

1. From the console, click the **Charging** icon.
2. Click **Select Printers** to display a list of printers available on the server.
3. In the **Available** column, select the printers you wish to add.
4. Click the **Add** button, and then click **OK**.

The printer appears in Print Charging Cost list with a cost of $0.00 per page.

To set the cost per page

1. From the console, click the **Charging** icon.
2. Select the printer in the **Print Charging Cost** list.
3. Enter the cost in the **Cost Per Page** box.

4. Click the **Set** button or press ENTER to save your changes.

Tip: If you want to track printing, but do not want 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 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.

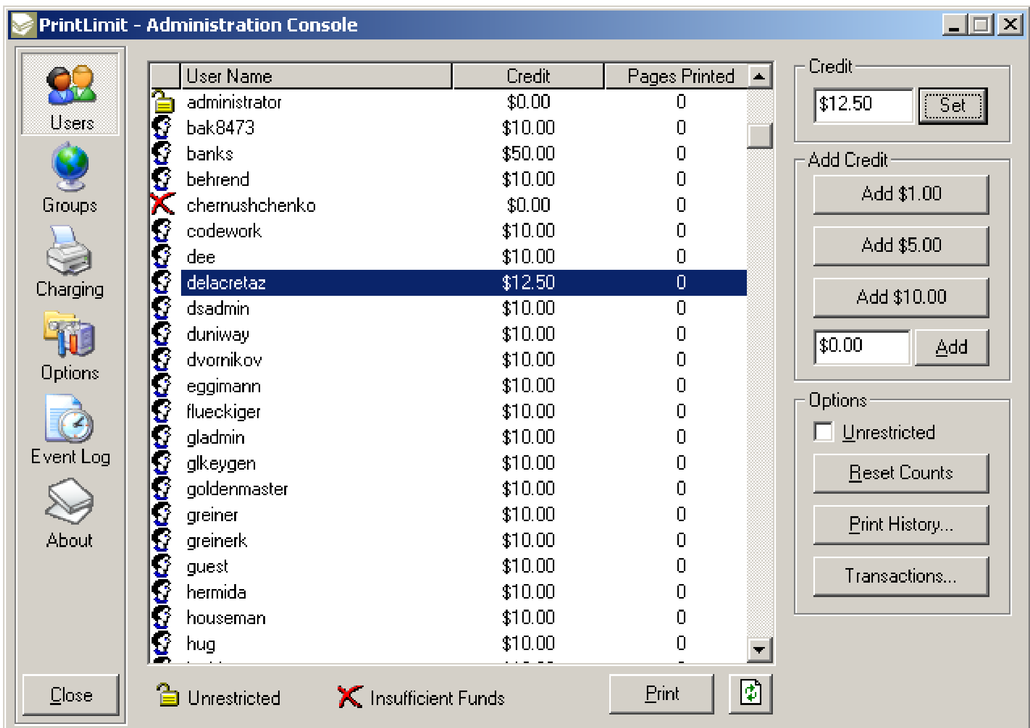


Figure 4: *The User section lists users and their account balances. Click the appropriate column heading to sort by User Name, Credit or Pages Printed.*

To set the funds in a user account to $50.00

1. From the console, click the Users icon.
2. Select the user's logon name in the list.
3. Enter 50 in the **Credit** box.
4. Click the **Set** button or press ENTER to save your changes.

To add $10.00 to a user account using the Quick Add buttons

1. From the console, click the Users icon.
2. Select the user's logon name in the list.

3. Click the **Add $10.00** button.

To add $7.20 to a user account

1. From the console, click the **Users** icon.
2. Select the user's logon name in the list.
3. In the **Add Credit** section, below the Quick Add buttons, change the value to 7.20.
4. Click the **Add** button or press ENTER to save your changes.

Setting User Privileges

When users attempt to print documents, Print-Limit determines if there are sufficient funds. If the cost of printing the document is higher than the credit in the user account, and that user is restricted, printing is denied. In some circumstances you may wish to allow users to continue printing, despite having insufficient credit. Giving a user unrestricted privilege allows the account for that user to be overdrawn.

To set a user to Unrestricted

1. From the console, click the **Users** icon.
2. Select the user's logon name in the list.
3. In the **Options** section, below the Quick Add buttons, select the **Unrestricted** check box. The user icon in the user list changes to an unlocked padlock.

Viewing User Print & Transaction History

Print-Limit maintains a detailed audit of each user's print activity and a log of all transactions that affect a user's credit. All activity is logged in the Print-Limit event log. Print job information can be viewed in the Event Log section. For convenience, a user's print history can also be accessed through the Users section.

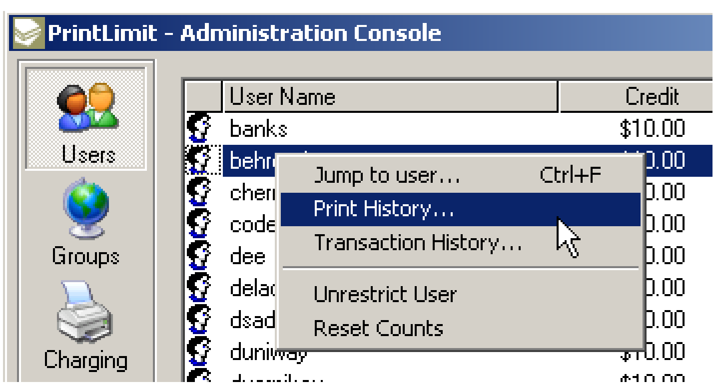


Figure 5: *Right-click options on the user administration screen*

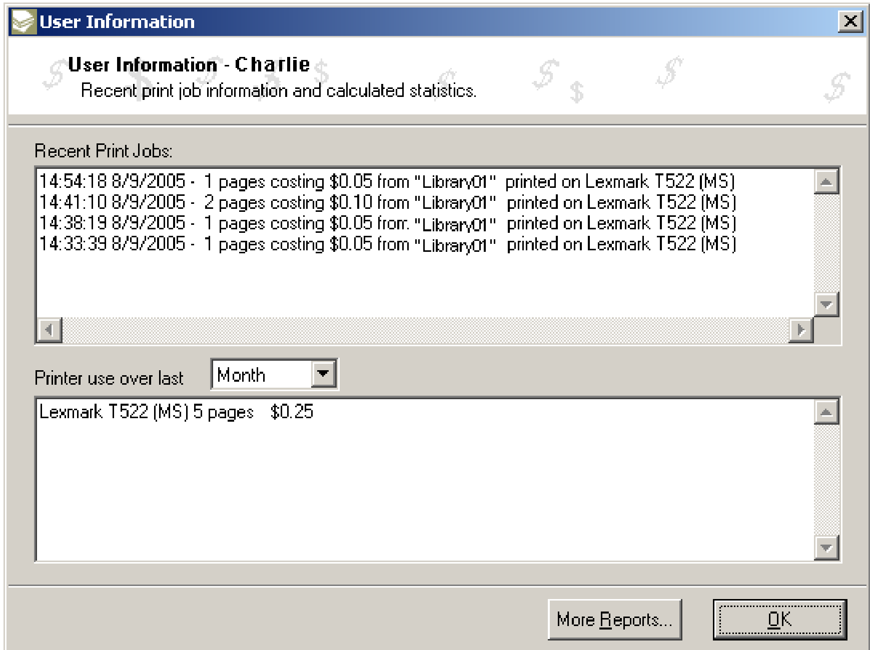


Figure 6: *Click Print History to view a user's recent print jobs.*

To view a user's print history

1. From the console, click the **Users** icon.
2. Select the user's logon name in the list.
3. Click the **Print History** button. The **User Information** window appears.

To view recent print jobs printed on a particular printer

1. From the console, click the **Charging** icon.
2. Select a printer from the list.
3. Click the **Recent Jobs** button. The **Recent Print Jobs** window appears.

To view or hide document names

You can elect to view or hide document names when you view recent print jobs. For example, if your users print confidential forms or reports, you may want to remove those document names from a user's print history or the list of recent print jobs from a particular printer.

1. From the console, click the **Options** icon.
2. Click the **Print Charging Options** tab.
3. Select or clear the **Enable logging of document names** check box.

5. Print-Limit Web Tools & Remote Administration

The optional Web tools offer remote administration of user accounts and a number of user tools that are accessible from a standard Web browser. You can use these tools to browse recent print jobs. These tools are ideal for programs that require remote access for simple account management in a user pays environment. For instance, you can manage student accounts from an IT help desk. In addition to simple administration, the Web tools also provide network users with simple access to their account balances and usage logs; allow users to transfer credit to other users; and give users the ability to apply PrintCards to their accounts. This functionality is referred to as user tools.

Note: The Print-Limit Admin Console program offers more advanced management features. The Web based administration option is easy to use and does not require you to install additional software on remote workstations. This system is intuitive to non-technical users familiar with Web pages. 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 using remote server access software such as Virtual Network Computing or Windows Terminal Server to access the Print-Limit Administration Console.

System Requirements for Web Administration

- Microsoft Internet Information Services (IIS)
- A standard Web browser (Internet Explorer 5.0 or greater, Mozilla Firefox)

Installation

Installing Print-Limit Web tools is optional. Print-Limit functions fully without the Web tools; however, you must use the Print-Limit Administration Console to administer accounts. We recommend that you use Print-Limit Web tools so you have administration access from any computer with a Web browser. Below is a checklist of the tasks associated with Installing Print-Limit Web tools.

5.1 Install the Internet Server Software
5.2 Add a Virtual Directory to IIS
5.3 Configure File Permissions
5.4 Tailor the Interface
5.5 Test the Setup

Note: If Microsoft Internet Information Services (IIS) are installed on the server at the time you install Print-Limit 6.0, the Web tools are automatically created and configured. The Print-Limit installation creates a new IIS virtual directory called "Print-Limit" and configures it exactly as described in the instructions below. To test the Web tools, open a Web browser to http://your_server_name/printlimit. If the Web tools were not installed automatically, follow the steps below to install and configure them manually.

5.1 Install the Internet Server Software

Microsoft Internet Information Services (IIS) with Active Server Pages (ASP) extensions is required on the primary Print-Limit server, and can be installed either before or after the installation of Print-Limit. 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. You must turn this feature on after installation. To do this, open the Internet Information Services (from the Control Panel, open **Administrative Tools** and then click **Internet Information Services**) and select the **Web Service Extension node** and allow the active server pages extension.

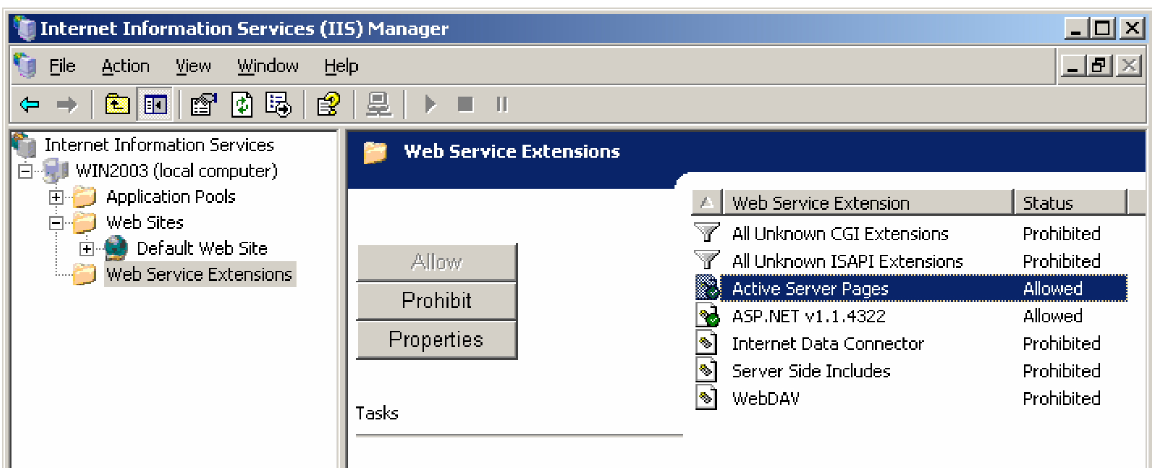


Figure 7: *Enabling Active Server Pages on Windows 2003 Server*

5.2 Add a Virtual Directory to IIS

You need to create a virtual directory for Print-Limit Web tools. To do this:

1. From the Control Panel, open **Administrative Tools** and then click **Internet Information Services**.
2. Right-click the Web site under which you want to create the virtual directory. The default is named **Default Web Site**.

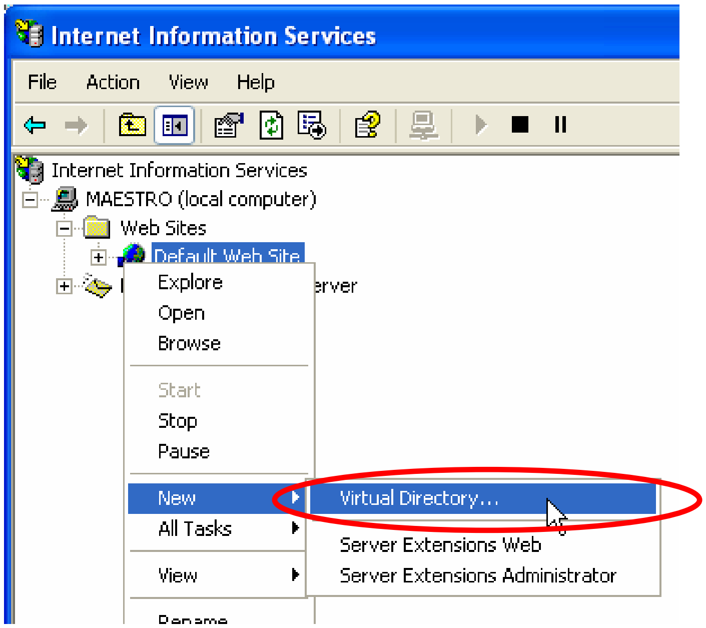


Figure 8: Creating an IIS virtual directory for Print-Limit Web tools

3. Enter the name of the virtual directory in the **Alias** field, for example Print-Limit. Then click **Next**.
4. Select the directory where Print-Limit Web tools are installed, for example, C:\Program Files\GenevaLogic\Print-Limit\WebAdmin. Then press **Next**.
5. Ensure that the “Run scripts” option is enabled. Then click **Next**.
6. Click the **Finish** button.

Print-Limit Web tools require users to authenticate with Internet Information Services (IIS). To configure IIS to force user authentication, you need to deny anonymous access on the Print-Limit virtual directory. To do this:

1. Right-click the Print-Limit virtual directory in the IIS console and select **Properties**.
2. Select the **Directory Security** tab.
3. Click the **Edit** button in the **Anonymous Access and Authentication Control** section.
4. Clear the **Anonymous access** check box

5. Select the **Integrated Windows Authentication** check box (as shown below).

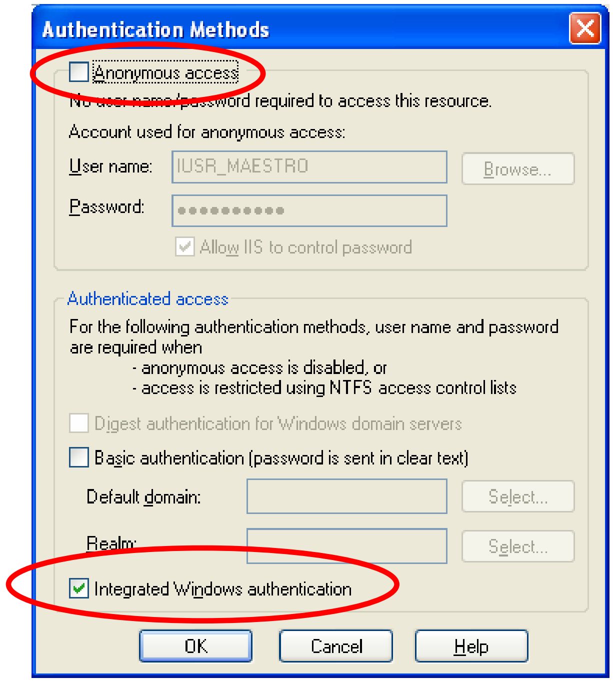


Figure 9: *Configure IIS to require user authentication.*

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

1. Right-click the Print-Limit virtual directory in the IIS console and select **Properties**.
2. Select the **Virtual Directory** tab.
3. Click the **Configuration** button in the lower right corner of the screen.
4. Select the **App Options** tab.
5. Select the **Enable session state** check box (at right).

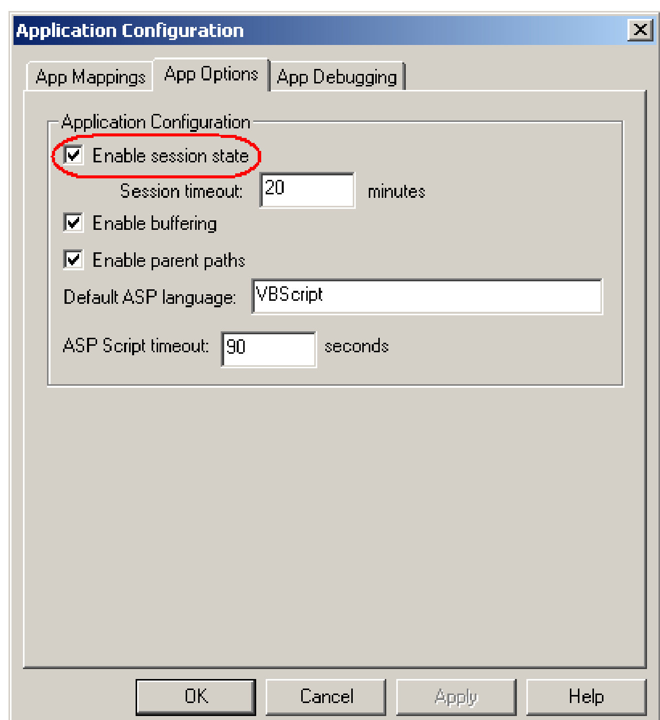


Figure 10: Enabling IIS Session State.

5.3 Configure File Permissions

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

1. Open Windows Explorer.
2. Locate the Print-Limit file for which you want to set permissions. Specific files and their functions are listed below.
3. Right-click the file, select **Properties**, and then click the **Security** tab.
4. Click the name of the group or user whose permission you want to change for this file.
5. Under **Permissions**, select the appropriate Allow or Deny check box. Recommended permissions for Print-Limit files are listed below.
6. Clear the check box **Allow inheritable permissions from parent to propagate to this object**.
7. Click **OK** to save your changes.

Administration Pages

The following Administration pages should be accessible only to users who are allowed to perform user administration functions (for example, administrators or other admin staff). All other users should be restricted from accessing these pages. If these users have access, they are able to modify user credit.

Files

`C:\Program Files\GenevaLogic\Print-Limit\WebAdmin\Admin.asp`

`C:\Program Files\GenevaLogic\Print-Limit\WebAdmin\UserList.asp`

`C:\Program Files\GenevaLogic\Print-Limit\WebAdmin\OtherCharges.asp`

`C:\Program Files\GenevaLogic\Print-Limit\WebAdmin\LogReport.asp`

Permissions

- Read and Execute (or Full Control) permissions to Administrators (or other administrative groups).
- No privileges to any other normal users.

Files

All other files under `C:\Program Files\GenevaLogic\Print-Limit\WebAdmin`

Permissions

These files should be accessible to all users (administrators and your other users).

- Read and Execute permissions to Domain Users (or other user groups).

Print-Limit Databases

Users need read/write permissions to the following Print-Limit folders and databases:

Files

```
C:\Program Files\GenevaLogic\Print-Limit\Database\
C:\Program Files\GenevaLogic\Print-Limit\Database\pcuserdb.mdb
C:\Program Files\GenevaLogic\Print-Limit\Logs\
C:\Program Files\GenevaLogic\Print-Limit\Logs\*.mdb
```

Permissions

- Ensure all users have full control (i.e. Users or ‘Domain Users’ have full control).

5.4 Tailor the Interface

Print-Limit Web tools offer two levels of control over the functionality and look. The first method, editing the configuration file, offers control over which features are available and what language the interface uses. Administrators can use a text editor (for example, Notepad) to modify this configuration by editing this file:

`C:\Program Files\GenevaLogic\Print-Limit\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 activated by default.

Web Tools Control Option	*Description*
gblnShowUserPrintLog	Users can view their print history.
gblnShowUserTransactionLog	Users can view their transaction history.
gblnShowTransferOption	Users can transfer funds from one Print-Limit account to another.
gblnEnableTopUpCards	Print-Limit supports PrintCards.
gblnAlwaysShowAdminLink	Activates the quick links on the Administrator pages.
garrChargeTypes	Applies a list of other charge types that override the charges that Print-Limit provides. Default charges include: • Other charges (miscellaneous) • Photo paper • Transparencies • Binding • Other special paper • Library fines • Late payment fees • Rental fees
SetActiveLanguage("en")	Forces Print-Limit Web tools to use a particular language. If this setting is not set, Print-Limit automatically detects the user's language from the browser settings.

Note: If your local language is not available, please contact Technical Support for instructions on how to translate the interface.

Note: If you do not want to treat Print-Limit credit as currency, you can configure Print-Limit to remove the currency symbol from Web tools. To do this, set the following the registry setting to 0:
`HKEY_LOCAL_MACHINE\Software\Print-Limit\WebShowCurrency`

5.5 Test the Setup

Open a Web browser on the print server (or another computer on the network) and connect to http://*PrintServerName*/print-limit/UserList.asp, where PrintServerName is the network name associated with the print server that runs Print-Limit. A user list appears. If requested, enter the 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 recommend that you also access the page while logged on as a non-privileged user; such a user should not have access to this page. If access is granted, check the permissions allocated to the Admin.asp, UserList.asp, LogReport.asp and OtherCharges.asp files in the WebAdmin directory.

Advanced Configuration & Customization

Often the options available in the Config.inc do not cover the full range of customization required. Many organizations may want to fully integrate Print-Limit Web tools into an existing Intranet or portal Web site. Print-Limit Web tools was developed using Microsoft Active Server Pages (ASP) technology. System administrators with HTML experience can modify the appearance of the Web tools pages. Most colors and fonts are controlled via the Print-Limit.css file. The header.inc file controls the header and logo layout. Make a backup copy of these files as future Print-Limit upgrades may overwrite the changes.

6. Using the Web Tools

You can access certain Print-Limit tools using a Web browser. Print-Limit includes a series of Active Server Pages (ASP) to provide standard Web access to important tasks, such as transferring funds and reviewing a user's print history. The Web tools are an important component of Print-Limit and time should be allocated to complete this setup task.

Note: Print-Limit Web tools must be installed and set up separately from the Print-Limit Administration Console. For more information about installation, see *Print-Limit Web Tools & Remote Administration* on page 19.

There are two components of Print-Limit Web tools:

- **User Tools** provide read-only access to user oriented information such as the user's account status and print history, transaction history. The users can also use PrintCards and transfer funds to other users.
- **Administration Tools** give system administrators access to user accounts and allow them to manage the accounts remotely.

Both Web tools components are password protected. By default only users in the Administrators group have access to the account administration functions.

User Tools

All network users have access to http://PrintServerName/print-limit/ (where PrintServerName is the name of your print server). From the **My Summary** link, network users can access their current account balance and summary usage information. This Web page replaces the functionality offered by the User Inquiry tool.

Other user links include:

- **Transfer Funds** allows users to transfer funds to other users. This is useful for group projects.
- **Use PrintCards** allows users to add credit to their accounts with a PrintCard that they have purchased or been given. (For more information on PrintCards, see *Creating PrintCards* on page 57.)
- **Charge Rates** allows user to compare the amount each printer charges per page. This Web page also displays any discounts available for grayscale or duplex printing

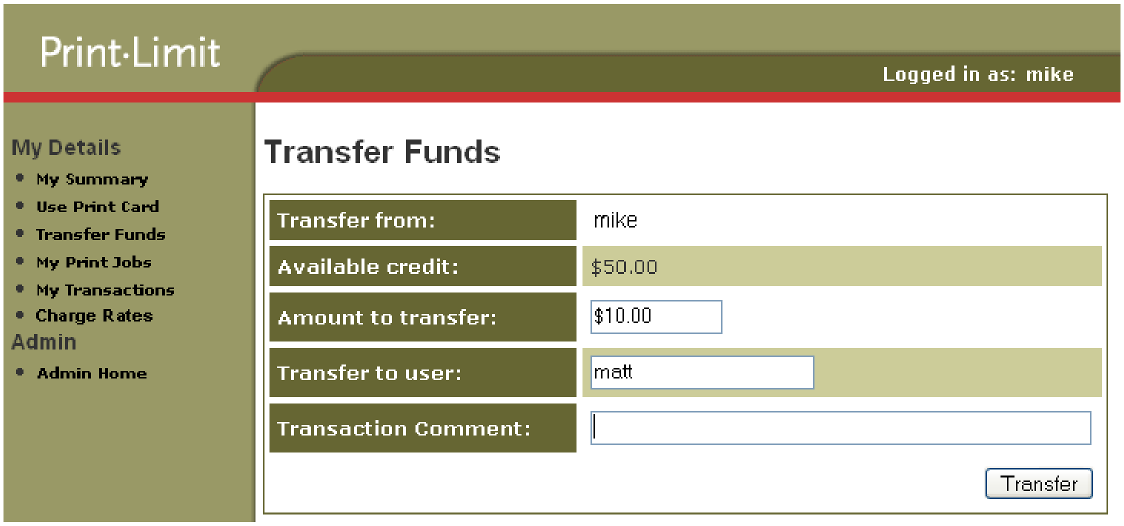


Figure 11: *Use the Transfer Funds screen to allocate credit from one fund to another.*

Administration Tools

Account administrators can access the administration page at http://PrintServerName/print-limit/Admin.asp (where PrintServerName is the name of your print server). Use this page to perform account maintenance tasks. Click **Admin Home** to see a list of tasks.

Under the heading **Admin**, click **User List** to view a list of users, their current account balances, and a summary of their print usage. Click a user name view a user record in detail. From here you can alter account credit and other privileges. After you edit a user's account balance, click **Save**. Under the **Adjust Credit** section you can apply credit adjustments to the user's account and enter a comment associated with the adjustment. From the transaction audit log, both the user and other administrators can view the comment to learn more about the change to the account.

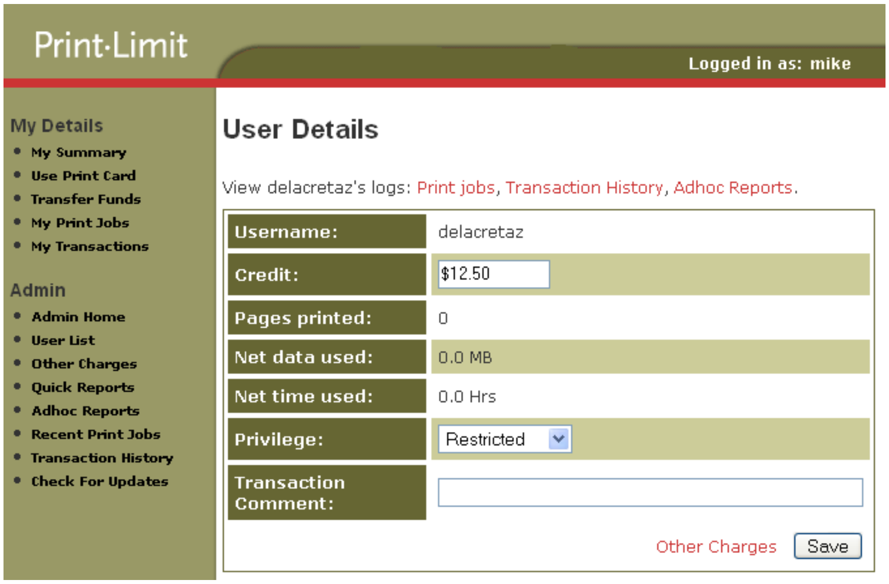


Figure 12: *After editing a user account balance, save your changes.*

To view a user's detailed print log, open the **User List** and click the **Pages Printed** cell for that user. You can also view recent print jobs and transaction history. Select a link from the **Admin** menu on the left. These reports contain log information on the Print-Limit server where Web tools are running.

Note: Like the Event Log, Print-Limit only performs detailed logging on the server where Print-Limit is installed. If you want a consolidated view of print and transaction logs, use the Print-Limit log Import tools that can be found in the "Event Log" section of the Admin Console.

Web Reporting

Web reporting provides a number of predefined reports, such as Top Print Users and Largest Print Job. You can also create custom reports of printer use. Customized Web reporting combined with the power of Microsoft Excel provides many analysis options. From a report Web page, such as Busiest Printers, click **Export to Excel** to transfer the data to a spreadsheet, which you can use for more detailed analysis.

Figure 13: *Reports that are available in Print-Limit Web tools.*

Other Charges (manually charging users for associated services)

You can manually charge users for items other than print use and consolidate your user resource management requirements. For example, you can charge for special paper, binding fees, or even library fines. Under **Admin**, click **Other Charges**. Enter the user name, amount, charge type, and any comments you want to add. All the transactions you enter are stored in the user's transaction history.

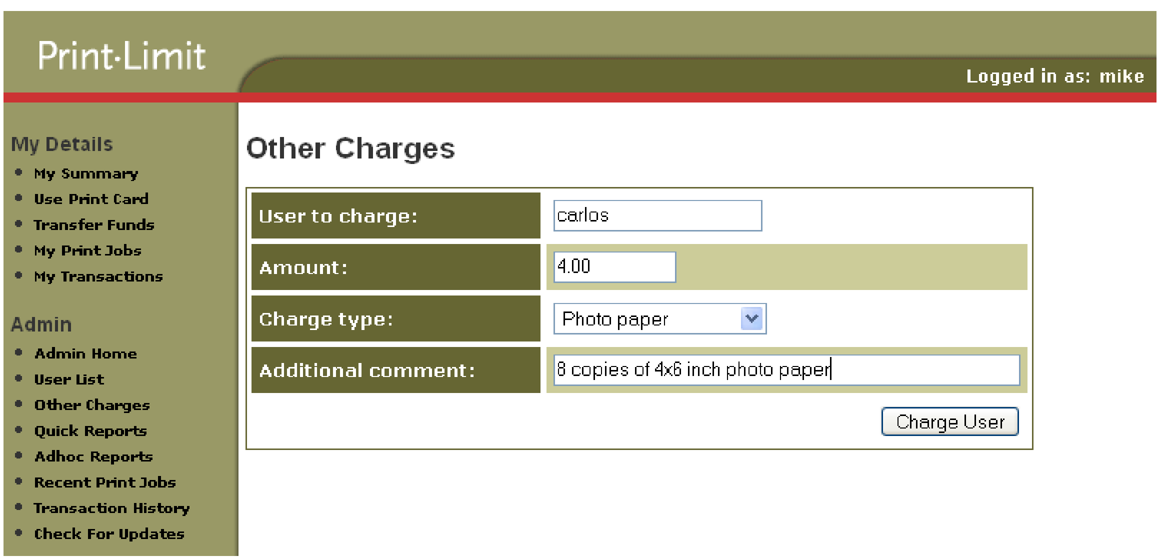


Figure 14: *Web Tools: Charge users for items other than print use.*

7. Installing the User Inquiry Tool

The User Inquiry Tool is a simple program that provides network users with access to their account balances. Before you install this tool, we recommend that you ensure that network shares were set up appropriately during installation.

1. On your print server, locate the sub-folder called **Database**, which is usually found at C:\Program Files\GenevaLogic\Print-Limit\.
2. Check that this folder has been shared as **PCDB$**. (Right-click the folder and select **Properties**, then click the **Sharing** tab).
3. Locate the sub-folder called **PCSetup**.
4. Check that this folder has been shared as **PCSetup**.

There are two ways to install the User Inquiry Tool: zero deployment installation or a full installation using the Print-Limit installer.

Zero Deployment Installation

Use zero deployment to install the User Inquiry Tool on network workstations. It has the advantage that no software needs to be installed on workstations; when you upgrade Print-Limit all workstations are also automatically upgraded.

For a detailed explanation of the zero deployment installation, see the README.txt file at the C:\Program Files\GenevaLogic\Print-Limit\PCSetup.

Note: If your workstations are running Windows 2000 or later operating systems, the User Inquiry Tool does not require any additional dependencies to be installed.

Full Installation Using the Print-Limit Installer

To install the User Inquiry Tool locally on network workstations:

1. Log on 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 is helpful. Print-Limit includes a sample batch file script to assist with this process.

Automated Installation of the User Inquiry Tool

If you have many network workstations, you may wish to automate the install process. The Print-Limit User Inquiry Tool comes with a Silent Install mode that you can use to do this.

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 mapped drive. Again, you can automate this with SMS or install scripts.

Additional Command Line Options

You can specify additional command line options 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 restart even if 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 the Print-Limit User Inquiry Tool needs. It was created automatically when you installed Print-Limit and can be found under the PCSetup directory under the Print-Limit installation (usually C:\Program Files\GenevaLogic\Print-Limit\PCSetup).

You can customize this file to suit your needs. For example, you can edit the Web site parameter to link to your school Intranet home page or the standard Print-Limit Web tools feature. You can also modify the banner link, control the credit limit warning message, and determine whether the client tools appear when users start their computers.

Whenever you install the Print-Limit 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. We recommend that you customize this file before you deploy the tool on network workstations. You can modify the file after installation by placing it under the Print-Limit Program Files directory.

The parameters in the setup.txt file are placed one per line as shown in below:

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

Parameter	*Description*
UserDBPath	The path to the shared user accounts database.
ShowLink	Whether to show the link in the banner of the client tools.
HideCurrencySign	Set to 1 to hide the currency sign. This removes the currency sign from the popup window. This is useful for organizations that do not want to charge users, but rather assign them a quota.
RefreshMinutes	The number of minutes Print-Limit waits before automatically refreshing the account balance. The default is 20 minutes. To avoid excessive polling on the server, you cannot set this value for less than five minutes.
WarnLimit	The credit amount below which Print-Limit displays the WarnMessage text (below).
WarnMessage	The text that appears when a user's account credit drops below the amount defined in the WarnLimit parameter (above). The default message is, "[User name], you only have [available credit amount] credit in your account." **Note:** In order to insert dynamic variables in this message, you must insert the variable name enclosed in percent symbols. For example, the user name and available credit amount appear in setup.txt as %user% and %credit% respectively.
WarnMessageTitle	The title that appears on the warning message popup window. The default is "Account balance is low."
MinimizeOnStartup	Set to 1 to minimize the User Inquiry Tool to the windows icon tray on start. The user can double-click the tool to open it.
LinkName	The name of the link that appears in the client tools. The default is http://www.genevalogic.com.
LinkPath	The Web address that appears in the client tools. The default is http://www.genevalogic.com.
WindowTitle	Sets the window title of the User Inquiry Tool. Use %user% to insert the user name in the title.
WindowPosition	Sets where on the user desktop the message window appears. You can assign the window position the following values: top-left, top-right, bottom-left, bottom-right. If you do not make any changes to this setting, the window appears in the top right corner.

8. Using the User Inquiry Tool

The User Inquiry Tool (UIT) is an optional program that Windows network clients can use. The User Inquiry Tool automatically appears when the user logs on and it displays the user's account status. It also warns the user when his or her account balance nears zero. When the account credit appears in red, the user has inadequate funds for printing. The refresh button located in the upper right corner of this window updates the balance. In addition to the User Inquiry Tool, a WinPopup message notifies users if they attempt to print with inadequate funds.

Figure 15: *The User Inquiry Tool*

A shortcut to the User Inquiry Tool appears in the Windows system tray (the notification area at the far right of the taskbar) and alerts users when they have a low balance (as shown below). You can customize this message to fit your needs. You can also configure a second message to appear upon every print job. For example, you may want to alert users to the number of pages they are about to print or how much they will be charged.

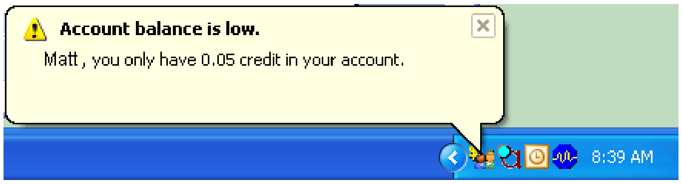


Figure 16: *User Inquiry Tool warning message*

To see his or her account balance, the user pauses the cursor over the Print-Limit icon in the system tray.

Figure 17: *The User Inquiry Tool displays account credit when the cursor pauses over the Print-Limit icon.*

The User Inquiry Tool is optional; it is not required for print management. As an alternative to the User Inquiry Tool, you can set up user access to Print-Limit Web tools. These tools provide information on the user's account status, access to his or her print history, and to the PrintCard and transfer credit feature.

9. Advanced Charging Options

Charge Different Amounts for Page Size, Color, and Duplex Documents

Print-Limit has the ability to set different costs for documents printed on different paper sizes, documents that use grayscale instead of color, and documents printed on both sides of paper (double-sided or duplex printing).

The cost per page for a given document is determined by the Print-Limit **Job Attribute Detector** (jad.dll). The JAD analyzes each print job and determines the cost as defined by the advanced printer charging rules.

To access the advanced print charging rules

1. From the console, click the **Charging** icon.
2. Select a printer from the list.
3. Click the **Advanced** button. The **Advanced Printer Options** window appears.

Note: There is an **Advanced Printer Options** window for each printer in the list.

By default, the advanced options are turned off for each printer. Turn on the advanced options for printers that support one of the following: duplex printing, different page size trays, or color printing. 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**—charges users based on three different paper size categories: standard, large, and very large. For example, you can charge one rate for letter size paper and another for tabloid.
2. **Page area charging**—charges users based on the document area. For example, you can charge an amount based on square feet.
3. **Charging by individual page sizes**—charges users based on individual page size and color (grayscale and color), with a default cost set at a flat rate or by page area. For example, you can charge a specific rate for a letter size page printed in grayscale and another rate for color. This is the most powerful method of charging and is suitable for designers, architects, and engineers who use advanced printers and plotters.

We recommend that you use the simplest charging method suitable to your situation. Print a test document to test each scenario you create and ensure the charging has applied as expected.

Page Size Category Charging

A practical example

You have a color printer that supports letter, legal, tabloid, and 12x18 inch size printing, both single and double-sided, and you would like to define rules to:

- Charge $1.00 per page for letter (standard or base page size) color printing.
- Charge $0.40 per page when users select grayscale. (This offers a discount for printing in black & white).
- Charge an extra $0.40 for tabloid size paper.
- Charge an extra $0.80 for 12x18 inch size paper.
- Offer a 50% discount double-sided (duplex) printing in order to encourage conservation.

To accomplish this complex set of charging rules, set up the **Advanced Charging Options** for the printer as shown below:

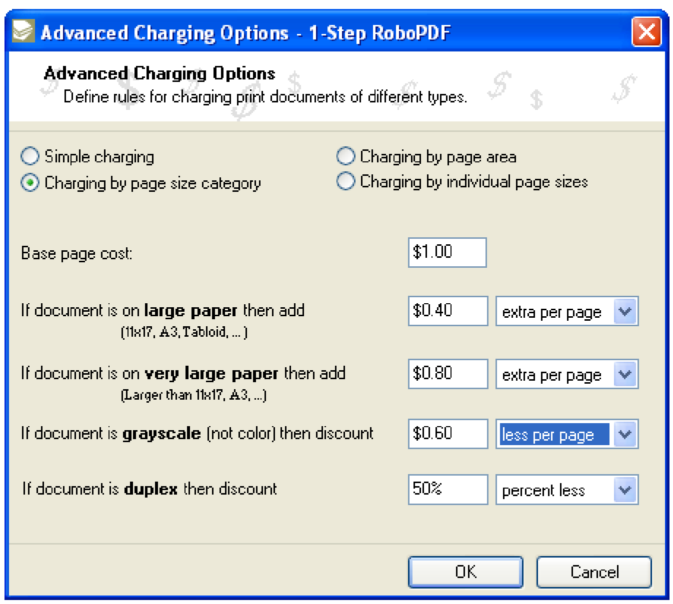


Figure 18: *Advanced charging screen allows detailed cost configuration*

The Print-Limit **Advanced Printer Options** offers a powerful rule set to define a fair page cost. You can define rules using fixed markups, discounts, or percentage-based modifications. The above example uses a mixture of fixed cost and percentage-based modification and can be used as a guide for setting up appropriate costs.

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

Page Area Charging

A practical example

You have a color printer or plotter that supports a range of page sizes and you would like to define rules to:

- Charge $10.00 per square foot of page size for color printing.
- Charge $4.00 per square foot of page size for grayscale.
- Set the duplex discount to 0% because the printer does not support double-sided printing.

  To accomplish this complex set of charging rules, set up the **Advanced Printer Options** for the printer as shown below:

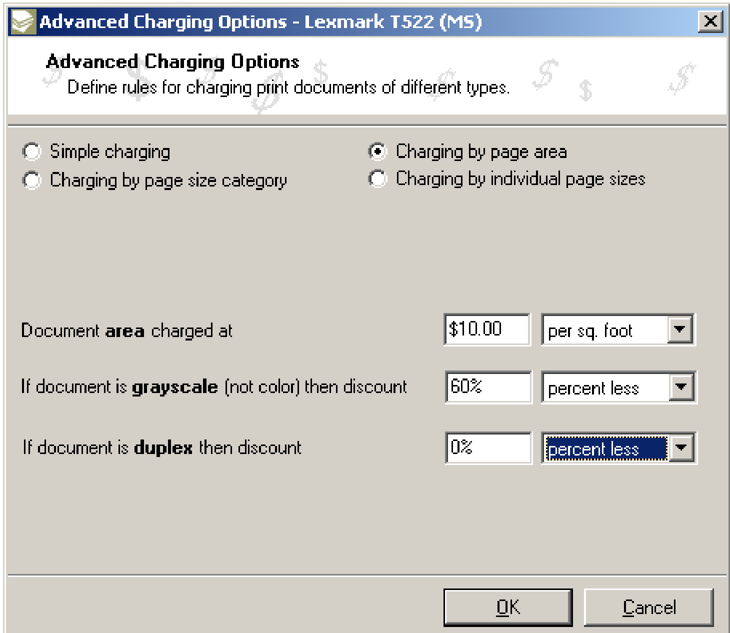


Figure 19: *Advanced charging by page area*

Note: In this example, the duplex option is left at 0% because the printer does not support double-sided printing.

Charging by Specific Page Sizes (Grayscale and Color)

This method is most suitable for advanced printers that offer a variety of page sizes such as the printers used in design, architecture and engineering firms.

A practical example

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

- Charge a default rate of $10.00 per square foot of page size for color printing.
- Charge a default rate of $4.00 per square foot of page size for grayscale printing.
- Override the default rates for grayscale and color for letter, legal, and ledger size paper and set the grayscale and color costs for each size explicitly.
- Set the duplex discount to 0% because the printer does not support double-sided printing.

To accomplish this complex set of charging rules, set up the **Advanced Printer Options** for the printer as shown below:

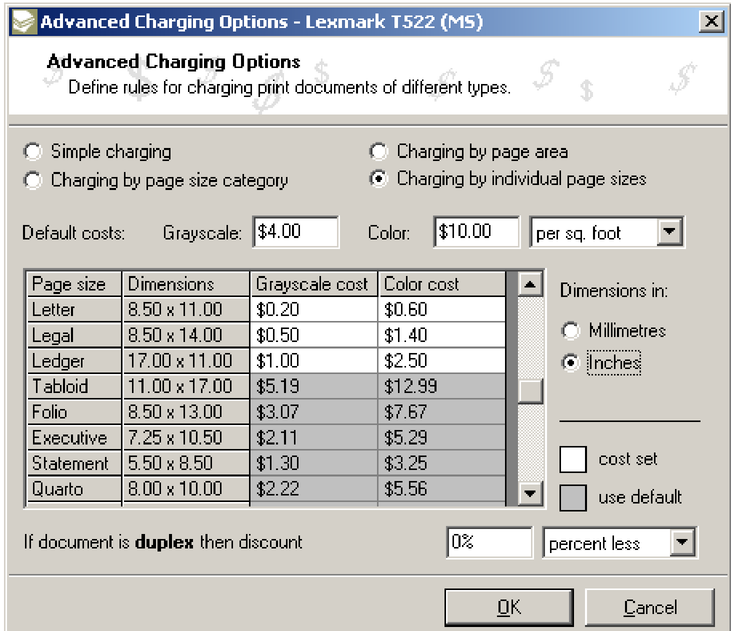


***Figure 20:** Advanced Charging by individual pages sizes*

Note: After you assign the default costs, those costs appear in the grid cells with a gray background. To override any of the default prices, click the appropriate cell and type the override cost. These new costs appear with a white background, as shown above.

Applying Filter Rules or Restrictions on Print Queues

Print-Limit 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 printer to allow only color or black and white documents.

Each printer has its own set of restrictions. The rules can apply to all users or restricted users only.

To access printer restrictions

1. From the console, click the **Charging** icon.
2. Select a printer from the list.
3. Click the **Restrictions** button The **Printer Restrictions** window appears.

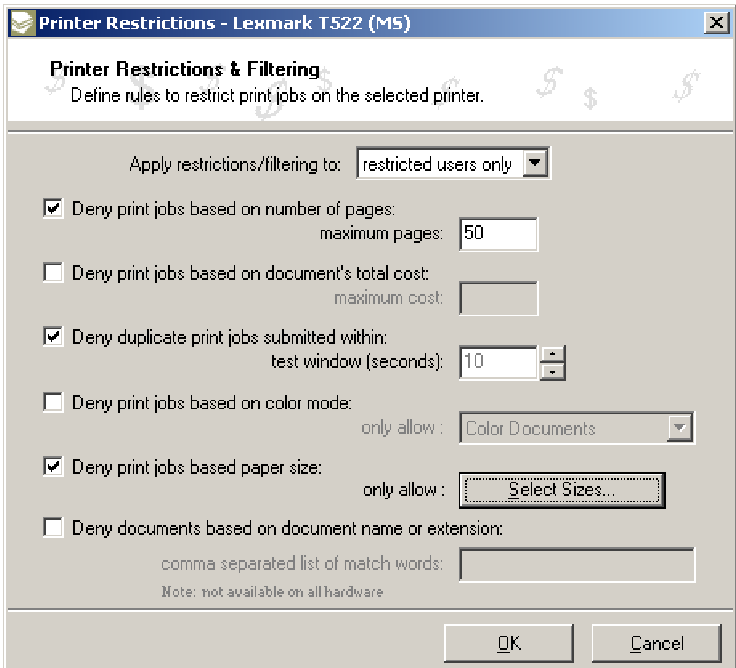


Figure 21: *Printer restrictions allows you to deny various types of printer jobs*

Note: These printer restrictions detect duplicate print jobs sent within a 10-second window and limit a single print job to 50 pages.

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 a single size of paper or two sizes if the printer has multiple paper trays. A non-standard size causes the printer to enter a manual load state, which causes the queue to halt. Printer restrictions allow administrators to select which paper sizes are permitted. Non-standard sizes are automatically deleted before they are sent to the printer. This is an effective way of reducing one of the most common causes of queue jams.

To restrict print jobs based on paper size

1. From the console, click the **Charging** icon.
2. Select a printer from the list.
3. Click the **Restrictions** button.

4. From the **Printer Restrictions and Filtering** window, select the **Deny print jobs based on paper size** check box, and then click the **Select Sizes** button.
5. Select the paper sizes you want to allow.

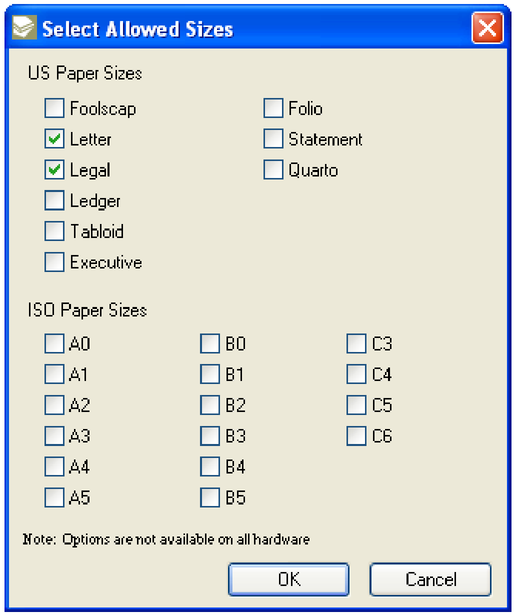


Figure 22: *Here letter and legal size pages are the only paper sizes that can be printed.*

Control documents on slow Inkjets

Inkjet printers have very low throughput rates. A large color document can hold up a queue and prevent other users from printing. You can set a restricted page count to prevent large print jobs. This forces users to split up large documents and allows other users to access to the printer.

Automatically delete duplicate jobs

Print-Limit can also monitor the print queues and automatically delete duplicate print jobs. This option is useful on networks with novice users. New users often double-click a program's printer icon, sending two identical print jobs to the queue. This wastes paper as well as the user's print credit. You can set printer restrictions to detect duplicate jobs and remove them from the queue. A message appears on the user's computer explaining that one job was deleted from the queue. The user is not charged for the duplicate job.

Note: This option can affect multiple prints from Microsoft Excel and other programs. Users who wish to print multiple prints from Excel may need to reprint the document 30 seconds apart.

Force sensible use

You can set restrictions to define a maximum cost per job. This prevents users from accidentally spending 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, a report from an accounting program may consist of 400 pages. A user may not be aware of this and accidentally print the report, expecting only a few pages. You can configure Print-Limit to recognize this document by its name and automatically remove it from the queue. Use the restrictions keyword filter to implement this functionality. Additionally it's also possible to filter documents based on a file extension by entering a keyword such as .htm or .pdf.

Note: This is not a security option. Users can rename the document to circumvent the filter.

Control who can print in color (Advanced)

You can combine Print-Limit's ability to restrict color printing (allow only grayscale) and standard Windows sharing permissions to control which users have access to the color printer.

To implement:

1. On the print server, install the drivers for the printer twice. Name one printer **Grayscale Only** and the other **Color**. You now have two printer icons (logical printers) each connected to the same physical printer.
2. Share the printers as you would normally.
3. Set Windows access permissions on each printer as required. Grant access to the color printer to the users who require color access. Limit the other users to access the grayscale printer.
4. Add the printers to Print-Limit and define appropriate costs.
5. For the **Grayscale Only** printer, set it to allow only 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. Print-Limit includes a number of features to help automate and manage the refund process. These include:

- Logging of cancelled print jobs.
- One-click refund action that quickly refunds a print job with a single click.
- Simple refund process using Print-Limit Web tools.
- 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 locate user cancelled and partially printed jobs to apply manual refunds (not supported with all printers).

A user is charged at the moment the print job completes transfer to the print server (when it finishes spooling). The job then sits 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 not refunded if the job is cancelled or deleted during printing. Due to buffering in modern printers, it is not always 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 automatically. Administrators must manually refund failed or partially printed jobs on a case-by-case basis, using Print-Limit's quick refund operation.

Partially printed or failed jobs are highlighted in the Print-Limit print log. In the Print-Limit Application Event log these jobs are marked with a yellow background. In the Print Limit Web tools, 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. Print-Limit has automatically refunded Jane's account. Kelly's 10-page document jammed half-way through the print job. Jack decides to issue Kelly a full refund. He brings up Print-Limit Web tools, locates Kelly's print job in the Recent Print Jobs report and clicks the Refund link.

To refund a print job in the Print-Limit Administration Console

1. From the console, click the **Event Log** icon.
2. Locate the job that requires a refund. Use the time, user name, and printer name to locate the correct job.
3. Right-click the log entry, and then click **Refund**.

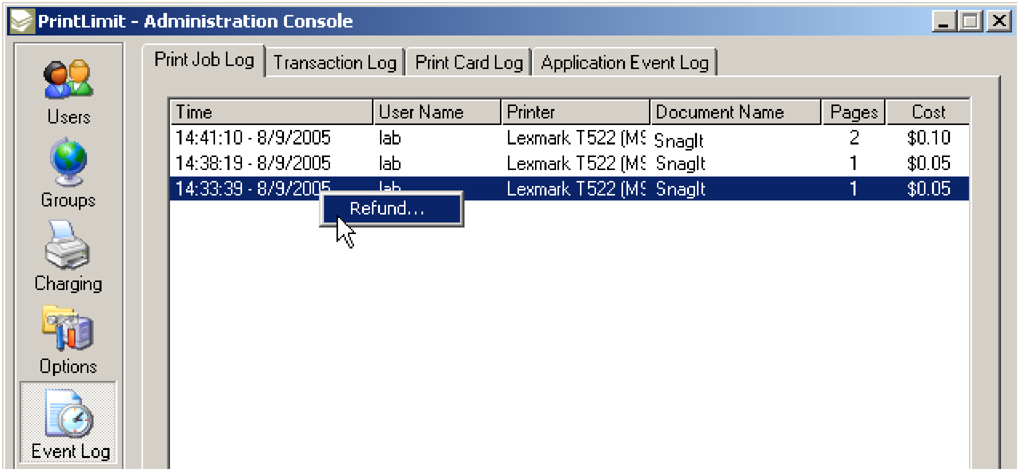


Figure 23: *Right-click a print job to issue a refund. Jobs cancelled during printing (and therefore are not refunded) are highlighted with a yellow background.*

7. Click **Yes** to confirm the refund.

To refund a print job in Print-Limit Web tools

1. Open Print-Limit Web tools in a browser. Click the **Admin** section.
2. To locate the job that requires a refund, click one of the following links:
    a. Recent Print Jobs
    b. User List (Click a user name in this list and then click Print Jobs.)
    c. Quick Reports (Click an appropriate report from the list.)
    d. Custom Reports (Select the report filters you want, and then click **Run Report**.)
3. When you find the print job, click the corresponding **Refund** link. Then click **Yes** to confirm the refund.

Turn off automatic refunds and logging of cancelled print jobs

1. From the console, click the **Options** icon.
2. Click the **Print Charging Options** tab.
3. Clear the **Track and refund cancelled documents** check box.

Providing Users with an Overdraft

An overdraft allows restricted users to print beyond their account balance to a defined limit. Print-Limit allows a global overdraft limit to be defined and applied to all restricted users.

To defined the overdraft limit

1. From the console, click the **Options** icon.
2. Click the **Print Charging Option** tab.

3. Modify the **Overdraft** value to the desired limit, and then click **Set**.

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, Print-Limit offers the option of automatically assigning new users initial credit the first time they print. This initial credit can vary depending on the user's groups. For example, you may wish to automatically assign managers or staff $100, but assign only $10.00 to all other users.

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

- Add the group to the **Groups List**.
- Set the initial credit amount assigned to new users that belong to the selected group.

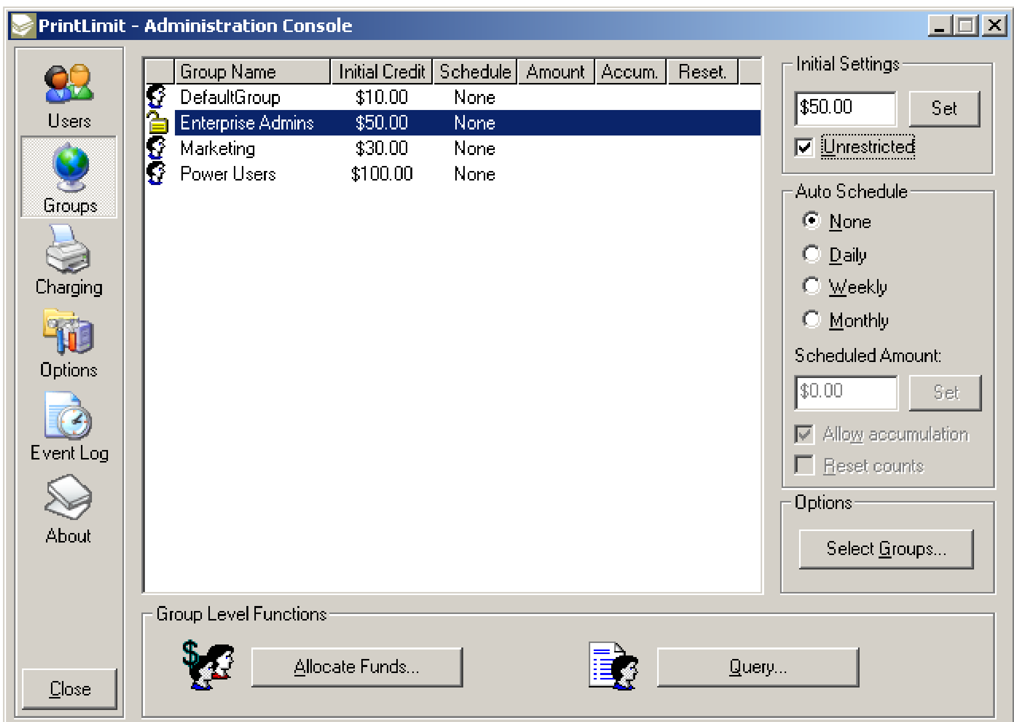


Figure 24: *The Groups section allows group level administration.*

To add the group to the Groups List

1. From the console, click the **Groups** icon.
2. Click the **Select Groups** button 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, and then click **OK**.

To set the initial credit

1. From the console, click the **Groups** icon.

2. Select the group in the **Groups List**.
3. Under **Initial Settings**, enter the amount that you want to give users of this group.
4. Click the **Set** button or press ENTER to save your changes.
5. (optional) If you want new users assigned to this group to have unrestricted privileges, select the **Unrestricted** check box.

If a new user belongs to two or more groups listed in the Groups List, that user is assigned the highest initial credit. If any one of the groups has unrestricted privileges, users that belong to that group inherit unrestricted access. You can override any initial settings in the user section at any time.

Note: If a new user does not belong to any of the groups listed in the Groups section, that user is assigned the initial credit given to the built-in **DefaultGroup**.

Credit Scheduling and Quota Allocation

Print-Limit can automatically add credit to members of a domain group on a daily, weekly or monthly schedule. Use automatic scheduling to encourage budgeting or reasonable printer use. To configure scheduling:

- Add the required group to the Groups List, if not already listed.
- Set the schedule period to the desired interval.
- Enter the scheduled credit amount to be added to the accounts of group members.

To set the Schedule Period

1. From the console, click the **Groups** icon.
2. Select the local or global group in the Groups List. (If the group is not listed, click **Select Groups** and add it.)
3. Under **Auto Schedule**, click the schedule period you want: daily, weekly or monthly.

To set the Scheduled Credit

1. From the console, click the **Groups** icon.
2. Select the local or global group in the Groups List. (If the group is not listed, click **Select Groups** and add it.)
3. In the **Scheduled Credit** box, enter the amount of credit to be added at every scheduled period.

Credit is 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. When a scheduled allocation is completed successfully, a message appears in the Print-Limit Application Event Log.

Tip: Alert your users the account schedules in order that they budget their printer use accordingly.

Advanced Credit Scheduling

You can also control how, and if, the scheduled credit is assigned. For example, you may want users to have a set amount of printing credit every quarter or semester instead of adding credit to their account balances. This prevents users from banking up or accumulating their allocation. When you turn off the **Allow Accumulation** setting on the assignment rule, users are allocated credit according to the following rules:

- If the user's current balance is below the schedule credit value, the balance is rounded up to the scheduled value.
- If the user's credit is above the scheduled credit value, no credit is issued to the account and the current balance remains.

This arrangement has an advantage over the more traditional "set user to X" arrangement. A user may require a larger balance in his or her account for a particular purpose. A network administrator can add additional money that exceeds the usual quota for a user account. Or a user may purchase an additional quota. The above rules ensure that any additional amount in a user account is not removed when auto-scheduling runs.

Note: The **Allow Accumulation** setting is a group option. It is 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. In Print-Limit's Groups section, the Student group has a $5.00 weekly assignment. The Allow Accumulation check box is cleared. This prevents the students from banking up their allowance. On Sunday night, the following happens:

- John has not printed at all during the week. His account is at $5.00 today and he will 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 printing a lot over the next week. Her teacher has set her 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. Print-Limit 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. You can do this, along with basic group querying, using the Print-Limit Group Level Functions*.* These options are found in the **Groups** section of the **Print-Limit Administration Console**.

Allocate Funds to Group Members

From the **Allocate Funds** window you can apply the following operations to all primary members of a specified group:

- Set the credit to a specified value.
- Add credit to user accounts.
- Change all group member privileges to Restricted or Unrestricted.
- Reset printing counts.

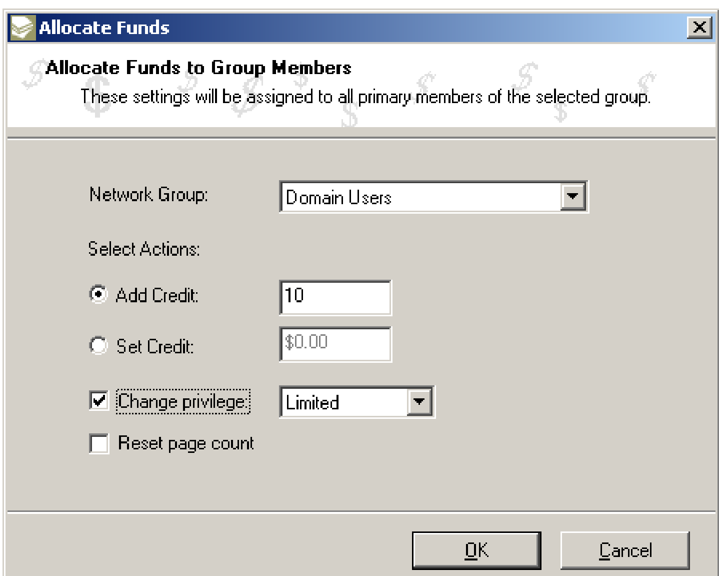


Figure 25: *The Allocate Funds window allows credit to be assigned to group members*

To set all members of a group to $50 and give these users unrestricted privilege

1. From the console, click the **Groups** icon.
2. Click the **Allocate Funds** button.
3. In the **Network Group** box, select the group you want.
4. Select the **Set Credit** option and enter 50.00 in the corresponding box.

5. Select the **Change Privilege** check box. In the corresponding box, select Unrestricted.
6. Click **OK** to apply your changes to the members of the group. You can view the changes in the user list, under the Users section.

Group Query

The **Query** option is a quick way to determine total page count and other usage information specific to any domain group.

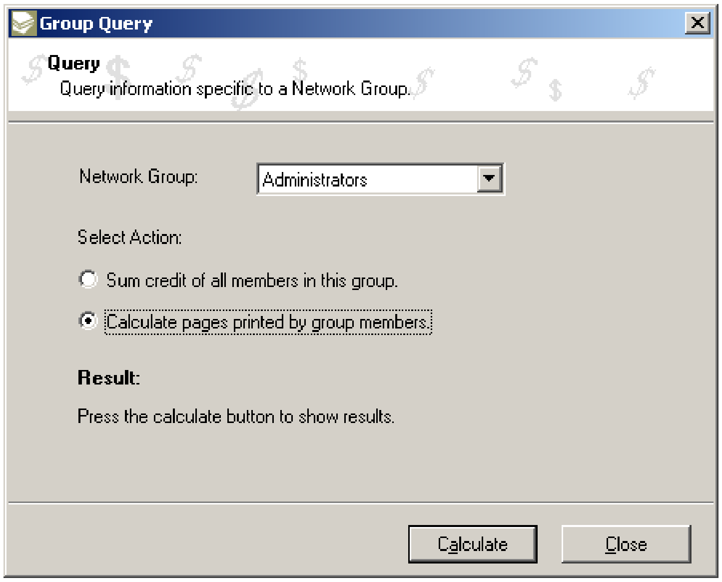


Figure 26: *Query usage information at a group level.*

To query the number of pages printed by members of a group

1. From the console, click the **Groups** icon.
2. Click the **Query** button.
3. In the **Network Group** box, select the group you want.
4. Select the **Calculate pages printed by group members** option.
5. Click the **Calculate** button.

Tip: Use the Microsoft Access reports available in Print-Limit to view more detailed information on groups and their members. For details, see *Reports, Custom Reports, and Charts* on page 55.

Changing the Deny Printing Message

Print-Limit sends users a message when a print job is denied. The message is sent using Microsoft Windows messenger service tools WinPopup or Net Send. In order for users to receive these messages from the print server, their workstations must be configured to receive WinPopup or Net Send messages.

- Windows 95 & 98—WinPopup is an optional component you must install. This tool is available on the operating system's CD-ROM. After you install WinPopup, we recommend that you create a shortcut for it in the Start Menu folder. The WinPopup program will start each time a user starts Windows,
- Windows NT, 2000, XP, 2003—The messenger system service must be running. This is installed and enabled at Windows installation. No action is normally required.

You can customize the message and include 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.

To change the deny printing messages

1. From the console, click the **Options** icon.
2. On the **Print Charging Options** tab, under **User Notification**, type your message in the appropriate **WinPopup message to send users when printing is denied** box.
3. Click **Apply**.

You can include substitution macros in your message. When Print-Limit displays the message, it automatically replaces the substitution macros with dynamically generated text. Available macros are listed on the next page. The "%" delimiter denotes the substitution macros.

Notify Users on Each Print Job

You can configure a message to appear after every print job. For example, you may want to alert users to the number of pages they are about to print or how much they will be charged.

To notify users on each print job

1. From the console, click the **Options** icon.
2. On the **Print Charging Options** tab, under **User Notification**, type your message in the appropriate **WinPopup message to send users on each print job** box.
3. Select the **Enable notification** check box.
4. Click **Apply**.

You can include substitution macros in your message. When Print-Limit displays the message, it automatically replaces the substitution macros with dynamically generated text. Available macros are listed on the next page. The "%" delimiter denotes the substitution macros.

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

Database Maintenance

The Print-Limit database stores all the user account information. If a user account is removed from the network, the username continues to appear in the Print-Limit database. A database tune up removes deleted names from the Print-Limit database and updates the database to match the domain or active directory user list. A tune up also:

- Adds any new network users not yet listed.
- Optimizes the database.
- Creates a backup and places it in the ~Print-Limit\Backup folder.

Although new users are added automatically the first time they print, we recommend that you perform a tune up after you add a number of new users, for example, at the start of a new school term. This ensures the database contains all users and optimizes the database for performance. New users are added using the Initial Credit rules set under the Groups section. We encourage administrators to perform a tune up every two to three months for backup and optimization purposes.

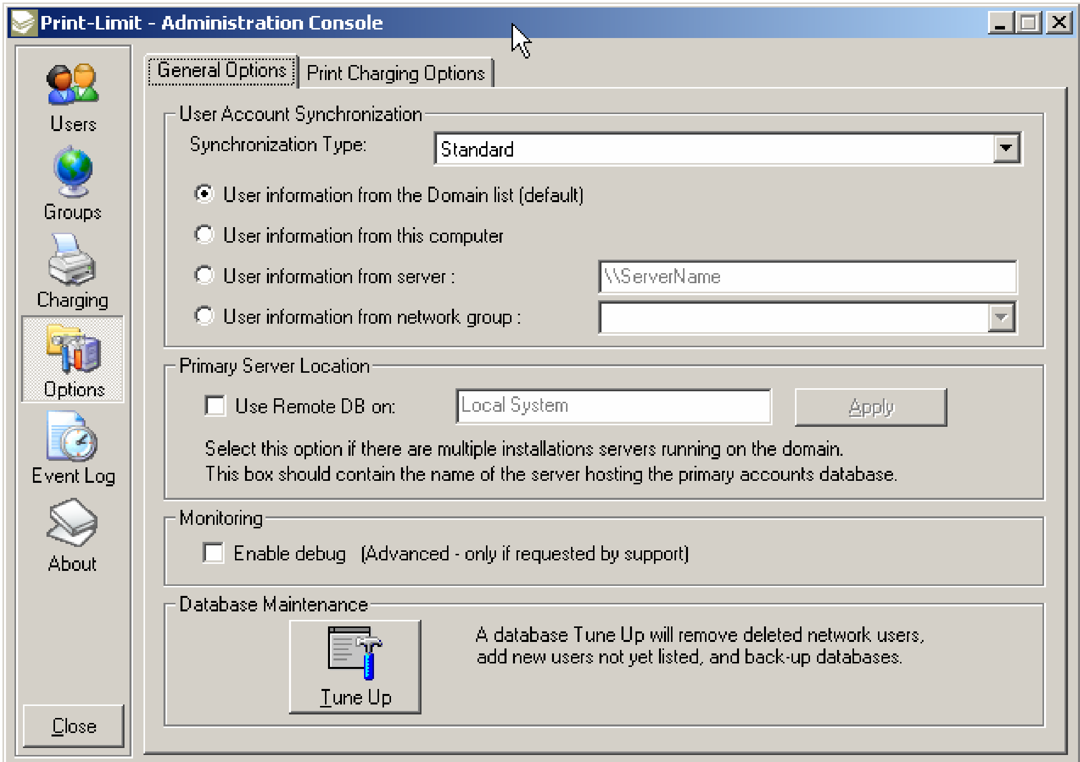


Figure 27: *Click the **Tune Up** button in the Options section to clean and optimize the database.*

Tip: You can schedule the addition of new users automatically. Print-Limit includes a batch file script that automates this process. For more information, see *Information for System Administrators* on page 67.

Event Log

The Print-Limit event log is divided into four sections or tabs: Print Job Log, Transaction Log, PrintCard Log, and Application Event Log. The Print Job Log provides a detailed history of all print jobs printed through the print server. Use the Transaction Log to view a full audit trail of all credit changes. Track card use and allocation with the PrintCard Log. The Application Event Log lists program specific events, such as starting and stopping the Print-Limit service and the status of any scheduled allowances. After you add new printers to your network and print test documents, use the Application Event Log section to verify that Print-Limit is working as expected. Administrators should check the event log on a weekly basis.

Exporting the Log Data

Print-Limit maintains a detailed log of each user’s printing history. You can export this log data as a comma-separated values (.csv) file and then import or open that file in other programs, such as Microsoft Excel. Excel offers a number of analysis possibilities. For example, you can:

- Graph user activity.

- Determine weekly trends.
- Justify to management that a new printer is needed in a classroom or lab.
- Calculate the printing revenues on a printer by printer basis.
- Visually communicate to users how much paper they use.

10. Reports, Custom Reports, and Charts

Print-Limit stores its print audit log in a Microsoft Access database. The Access database file format provides network administrators the flexibility to develop custom reports to meet their organization's requirements or to integrate Print-Limit into alternative accounting systems.

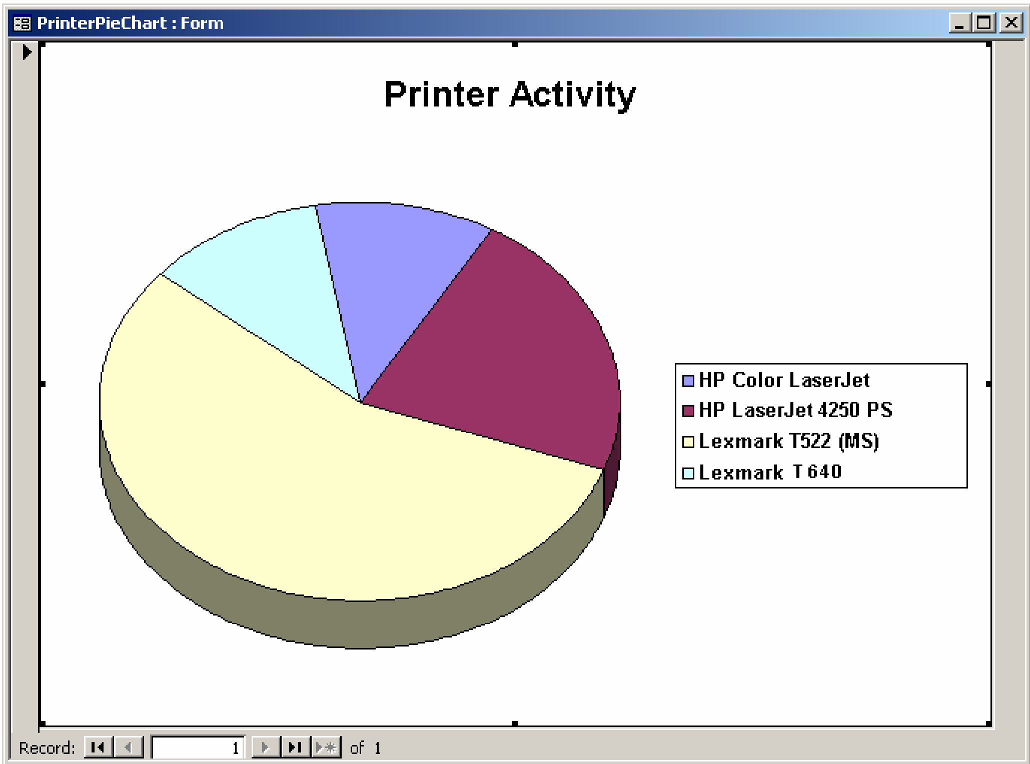


Figure 28: *Example of a printer activity chart.*

Print-Limit provides a number of sample reports, charts, and graphs. These reports meet the requirements of most organizations. System administrators with Microsoft Access experience should have no problem developing their own custom reports to meet their needs.

To access the Reports option, click the **Event Log** icon on the console. On the **Print Job Logs** tab, click the **Reports** button. This feature requires Microsoft Access to be installed on the system that hosts the printers and Print-Limit. You can save a snap-shot of the database as a Microsoft Access file and then open it on another system that has Access installed.

Tip: We recommend that you create custom reports in a separate Microsoft Access database that links to the live log data. This approach ensures that your custom reports are not overwritten in an upgrade. Print-Limit provides such a linked database for designing your custom reports.

Print-Limit provides a template database ready for creating your own reports. To open this database:

1. From the console, click the **Event Log** icon.

2. On the **Print Job Logs** tab, click the **Reports** button.

3. Then click the **Design Custom Reports** button.

Tip: You can also open the template database directly. Print-Limit stores this database at:

`C:\Program Files\GenevaLogic\Print-Limit\CustomReports\CustomAccessReports.mdb`

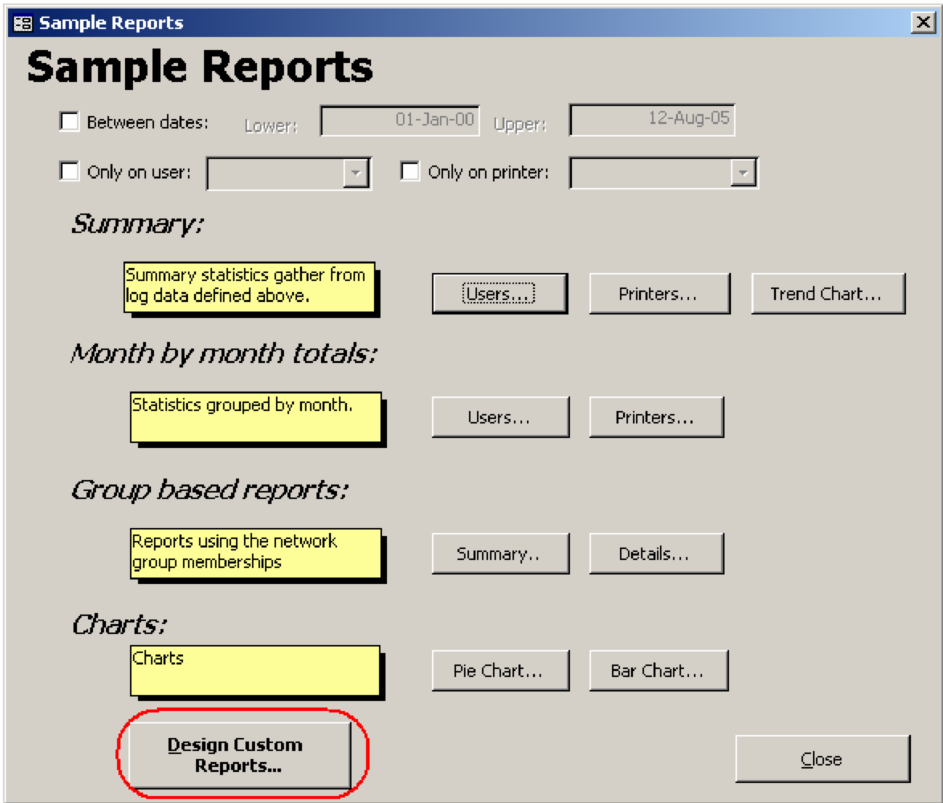


***Figure 29:** The Design Custom Reports button opens a template database with links to the live dataset.*

This template database contains a link to the live log dataset. You can make changes to this database, such as custom reports, queries, or graphs, without the fear of corrupting any important Print-Limit files.

Note: Microsoft Access is a complex application. Print-Limit's data model was built with simplicity as an important consideration; however, organizations that design custom reports should assign the task to a person with Microsoft Access experience.

11. Creating PrintCards

Overview

PrintCards are generated using the PrintCard wizard. This wizard is included when you install the Print-Limit Administration Console. You can also install the wizard on another computer. Start the Print-Limit installation program and select the **PrintCard Wizard** option.

Note: The Print-Limit wizard requires Microsoft Word.

PrintCard Definitions

Card Number

All cards are assigned a unique number, such as `P0409-1945-4833-5750-4452`. Print-Limit uses this number to identify the card and its value. From the Print-Limit Web tools, users enter this number to allocate the credit to their accounts.

Batch IDs

A batch ID is a user-defined identification number assigned to all the cards in a batch or collection of cards created at the same time.

Expire Date

This is the date on which a PrintCard can no longer be used. Similar to the Use By date on gift certificates, the expiration date ensures that cards remain in circulation for a limited period of time. We recommend a six to twelve-month period. In a school environment, the expiration date can be the last day of semester.

Card Template

You use a card template to define the appearance of your PrintCards. Templates are designed using Microsoft Word and its mail merge feature. 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 Print-Limit, the design template is the card template and card number list is the data source.

Number Definition File

The number definition file contains information about all the cards in a batch. This includes a list of card numbers, their expiration date and value. The card wizard creates this file during the generation process and the system administrator imports this file into the Print-Limit Administration Console.

PrintCard Web Entry Page

The PrintCard Web Entry page is the Web page in Print-Limit Web tools designated to PrintCards.

Using the PrintCard Wizard

This section is a walkthrough of the process to create a batch of PrintCards.

To create a batch of 100 standard PrintCards of $10.00

Step 1—Welcome

Open the **PrintCard Wizard** from the **Start** menu, and then click **Next.**

Step 2—Batch ID

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

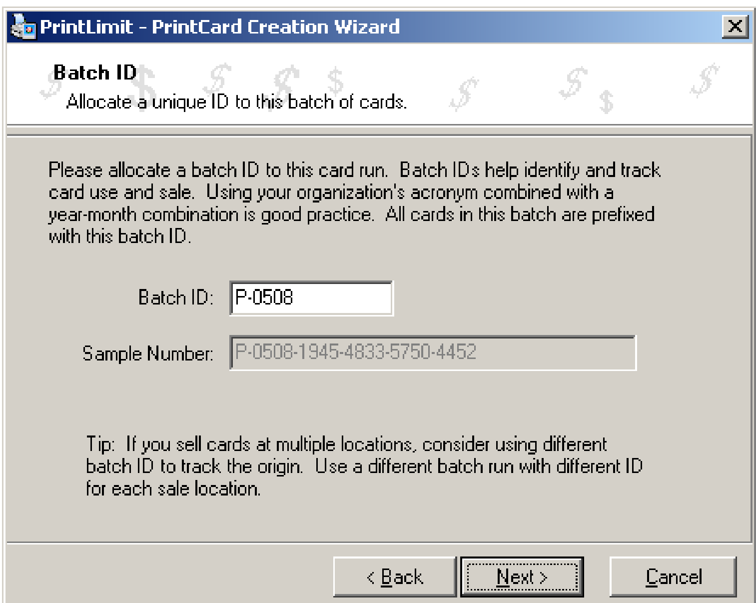


Figure 30: *Enter a batch ID for a group of PrintCards.*

Step 3—Card Attributes

In the **Number of cards** box enter 100. In the **Value** box, enter $10. By default, the expiration date is set six months in the future. We recommend that you select an appropriate date that corresponds to a fixed event, such as the end of the semester or budget year.

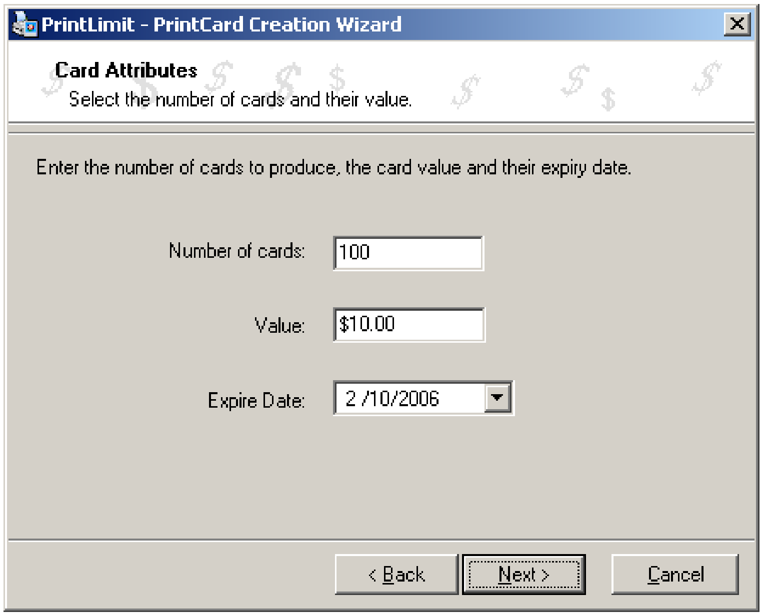


Figure 31: *Attributes include the number of cards to print, their value, and expiration date.*

Step 4—Design

You can modify the card design. This requires knowledge of the mail merge feature in Microsoft Word. Refer to the section *Card Design* on page 62 for further details.

A custom design is not required to produce a set of Print-Limit cards. Click the **Next** button to move to the next step without customizing the cards.

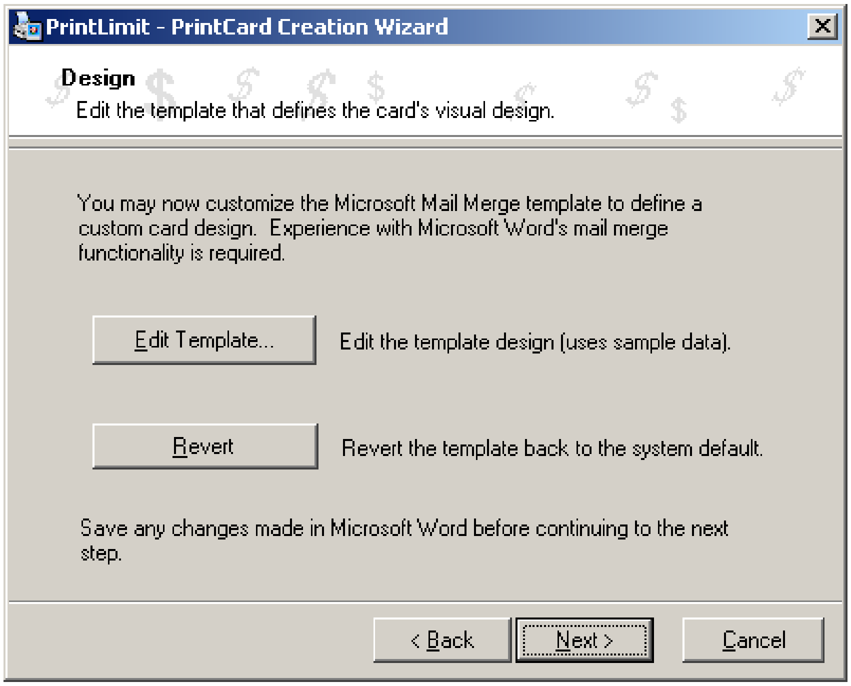


Figure 32: *Options to edit the design of custom cards.*

Step 5—Generate Numbers

Click **Next** to generate the card numbers. The card wizard prompts you for a location to save the number definition file. Save the file on the local hard drive or a secure network drive.

Step 6—Create Cards

The PrintCard wizard generates a merged Microsoft Word document.

Note: The PrintCard wizard uses Microsoft Word macros to automate much of the card generation process. Before it generates the Word document, the wizard asks if macros are enabled in Word. If the answer is no, or you are unsure, click **No** and the card wizard guides you through the process of enabling macros.

Step 7—Printing Cards

A new Microsoft Word document appears listing all 100 cards. The cards are standard business card size suitable for printing on heavy paper.

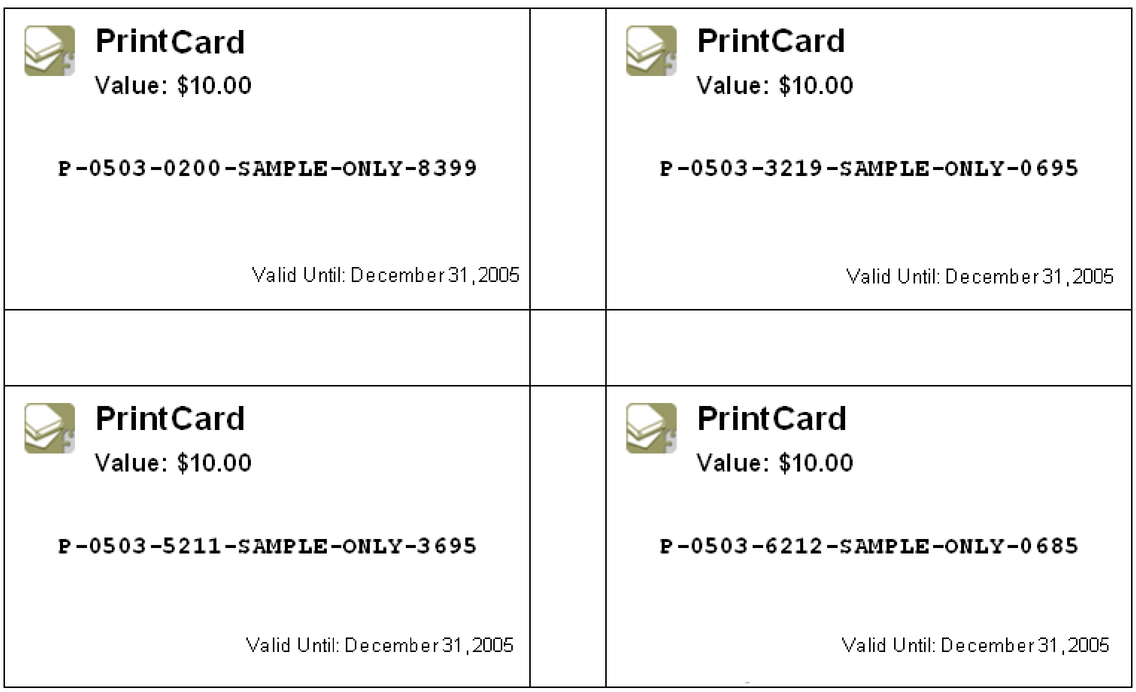


Figure 33: *PrintCards ready for printing*

Step 8—Importing

The final step is to activate the cards. To do this, import the number definition file into the Print-Limit Administration Console.

1. On the primary server, open the **Print-Limit Administration Console** and click the **Event Log** icon.
2. Select the **PrintCard Log** tab.

3. Click the **Import** button and locate the number definition file you saved in Step 5 above.

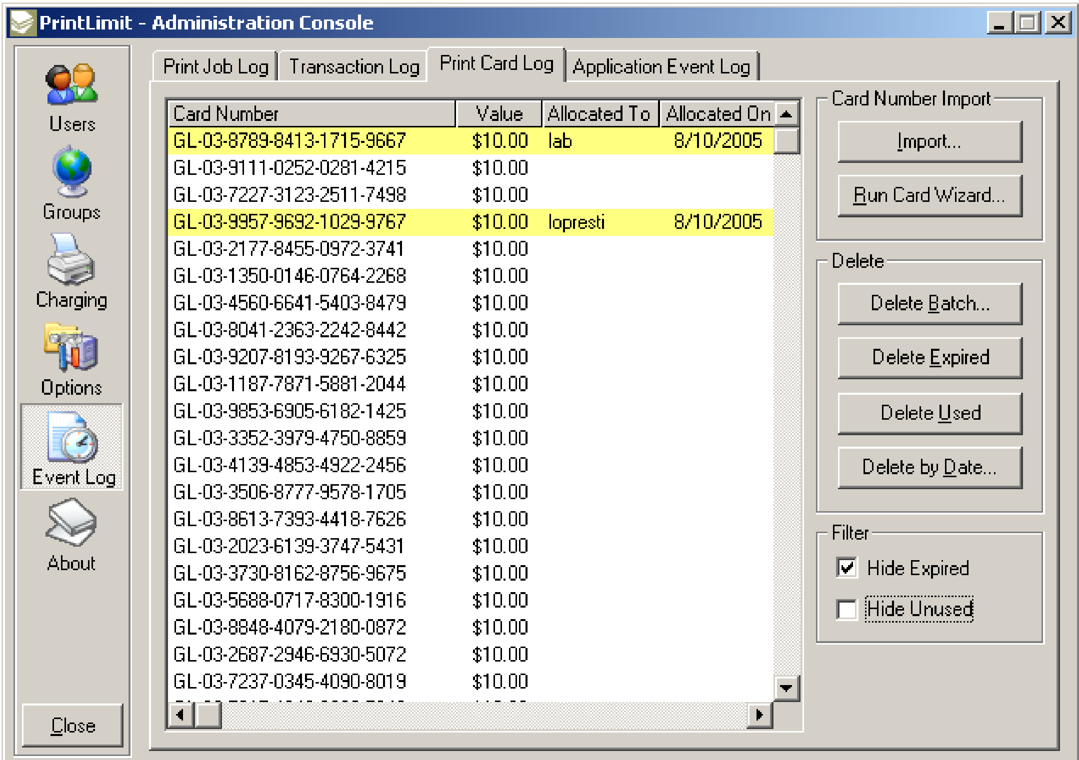


Figure 34: *The Card Log lists imported and used cards.*

Step 9—Testing

Using a card from the batch and a test user account, test the PrintCard batch to verify that the ID numbers work correctly and the credit amount is accurate. Remember to destroy the spent card used for the test.

PrintCard Tips

Security

Print-Limit's PrintCard system is designed with security in mind. Attempts to use fraudulent cards 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. PrintCards are a form of virtual currency and should be protected from unauthorized access and disclosure.

- After you print the cards, delete the generated Microsoft Word document or save it in a secure place.

- Delete the number definition file after you import it into Print-Limit.
- Never leave the cards in out in the open. Consider sealing cards in envelopes.
- Check the Print-Limit application event log on a weekly basis for security messages. Print-Limit logs and traps unauthorized card use.
- Use the PrintCard log to track card use and allocation.
- Cancel lost or stolen cards by batch number as soon as the problem is reported.

Card Design

The **Edit Template** button in Step 4 of the card wizard opens the standard PrintCard template that you can edit. You can use any standard mail merge design in the card wizard. You can also convert the template layout to letters rather than cards. The mail merge feature in Microsoft Word is designed for advanced users of the program. If you do not have experience with the mail merge feature, consider taking the step-by-step tutorial provided in Microsoft Word Help.

To change the logo graphic

1. In the PrintCard wizard, click the **Edit Template** button (described in step five above).
2. Click **Yes** to enable macros.
3. Select the standard Print-Limit logo and press DELETE.
4. Click the **Insert** menu, point to **Picture**, and then click **From File**.
5. Locate the desired logo and click **Insert**.

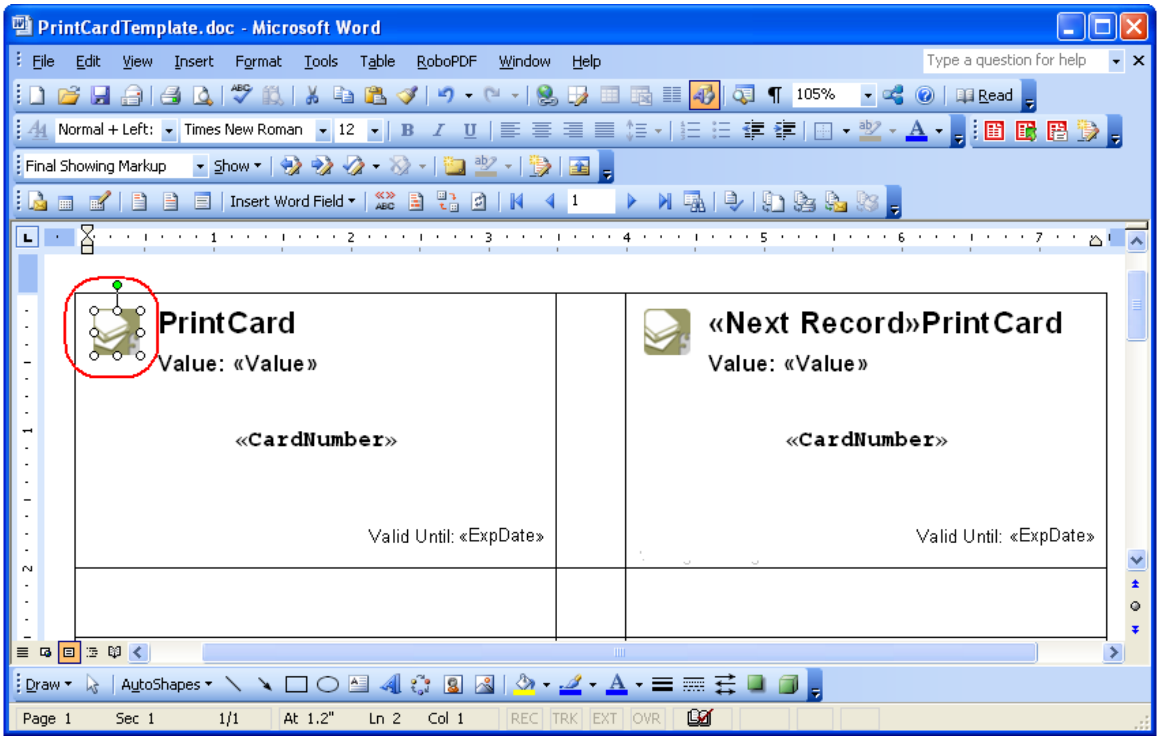


Figure 35: *You can insert a new logo in the PrintCard template.*

8. Click the **Propagate Labels** button on the mail merge tool bar. The new logo appears across all cards on the page.

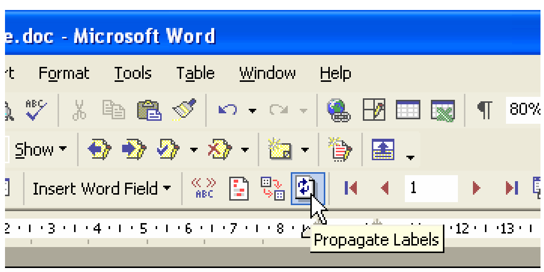


Figure 36: *The Propagate Labels button*

9. Save your cards.

10. Open the PrintCard wizard and create a test batch to view the card design.

PrintCard Design Ideas

- Remove the Print-Limit logo and replace it with your organization name.
- Enter a Web site address to the Print-Limit Web tools PrintCard page or a suitable page on your Internet site.
- Provide basic instructions on how to use PrintCards or direct users to a location where they can get help with PrintCards.

Additional Technical Information

- The PrintCard wizard uses a startup macro to automatically run the mail merge operation. Do not modify this macro.
- A set of sample number data is provided in C:\Program Files\GenevaLogic\Print-Limit\Templates\numbers.csv. By default, this is set as the design data source.
- Available data fields for the mail merge template:

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 expiration date.

Tips for PrintCards

- Consider allocating a different batch ID prefix for each sale location. This helps you to track cards and identify the origin of fraudulent cards.
- If your PrintCards do not require an expiration date, set the Expire Date to a date far in the future and remove the ExpDate field from the card template.
- Print the first page of PrintCards before you print the whole batch.
- Monitor expiration dates and remove PrintCards for sale prior to the expiration date.

12. Using PrintCards

Many organizations run Print-Limit in either a silent logging mode or as a way of enforcing sensible quotas. Other organizations choose to run Print-Limit in charging mode, which requires users to make payments in advance. Recording and entering payments can be a time consuming process for staff or system managers. Print-Limit offers a Web interface for user account management to assist with the process. The PrintCard system included with Print-Limit streamlines the payment process and moves much of the manual handling over to the user. Below is an explanation of the PrintCard payment process:

The User's Perspective

Amy is a student at a local high school. The school uses Print-Limit to charge students for printing. Amy is allocated $5.00 a week. This week she has used all her allocation but still has one assignment to print on Friday. She purchases a $5.00 Print-Limit PrintCard from the school store. This card contains a 16-digit identification number. She logs onto the school's Intranet site to access her account from Print-Limit Web tools. At the Use PrintCard page, she enters the card 16-digit identification number. Her account is credited $5.00.

The Administrator's Perspective

Andrew is a system administrator at the same high school. At the start of the term he used the PrintCard wizard to generate 500 PrintCards valued at $5.00 each. Andrew generated the cards in two batches. He applied the prefix S1 to the first batch and L1 to the second batch. The S1 batch is sold at the school store and the L1 batch is sold at the school library.

The card wizard generates a number definition file for each batch. Andrew imported these numbers into Print-Limit. He also customized the cards to include the school logo and instructions on how to use the card.

During the year Andrew tracks the cards sold, using the batch prefixes to determine where students like to purchase cards. Andrew also keeps an eye on the event log where he can see if users have tried to guess card numbers.

The PrintCard System

The PrintCard system is included with Print-Limit and is 100% software based. You do not need any special hardware, such as smart card readers, or special coin or vending machines.

The system includes:

- A card wizard program that creates new cards.
- A Web page where users enter card numbers.
- A security framework that tracks card use and implements fraud prevention.

For more information on PrintCards, see *Creating PrintCards* on page 57.

To use a PrintCard to assign credit to a user account

1. Purchase a PrintCard. In schools, cards are often sold at the library or school cafeteria.
2. Open a Web browser and navigate to the Print-Limit Web tools page.
3. Click **Use PrintCard** on the left side of the window.
4. Enter the card number in the **Card Number** box and click **Use PrintCard**.
5. The credit amount listed on the card is transferred to the account and listed in the transaction history.

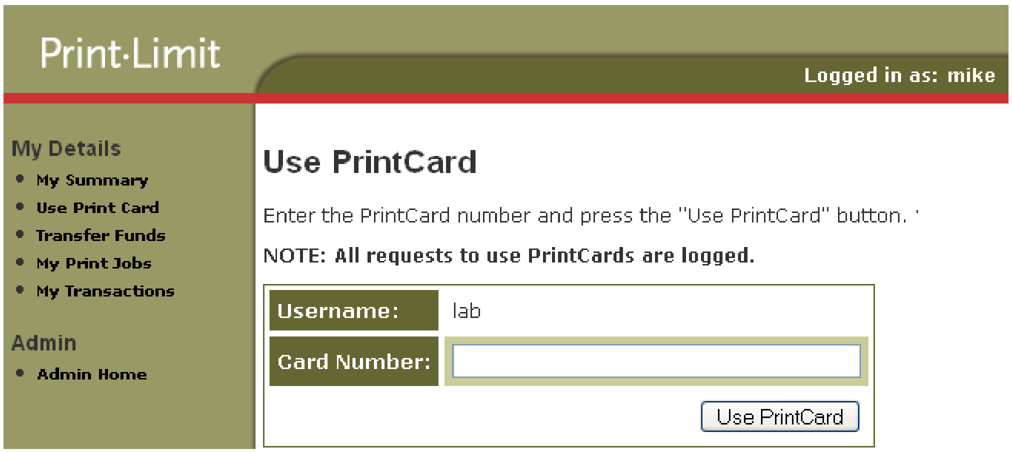


Figure 37: *The PrintCard entry page is available from Print-Limit Web tools.*

13. Information for System Administrators

Print-Limit 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 the ability to define initial settings for new users.
- Web tools for users to track and manage their own activity without the need for system administrator intervention.
- PrintCards to assist with payments. Users perform the allocation on their own accounts in a secure and traceable way without the need for administrator access.

The following is a list of tasks that system administrators should perform after installing Print-Limit.

Backups

System administrators should implement and enforce a suitable backup strategy. Print-Limit stores all data under the directory:

`C:\Program Files\GenevaLogic\Print-Limit`

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 six months.

Important Print-Limit data is stored in Microsoft's Access 2000 file format (*.mdb). You can restore these files at any time provided you stop the Print-Limit system services manually. System administrators can also use Microsoft Access to merge data manually and inspect it if necessary.

Log and Activity Monitoring

Print-Limit keeps its own log of system events in the text file:

`C:\Program Files\GenevaLogic\Print-Limit\Logs\event.log`

You can view this log from the Print-Limit Administration Console under the Event Log section. We recommend system administrators inspect the log daily for the first week after installation and weekly thereafter. System Administrators may choose to use a log watching program to detect and alert for events containing the words *error* or *security*.

Automatic Synchronization with Active Directory

New domain users are automatically added to Print-Limit the first time they print if you defined a suitable initial credit rule. You can add users manually at any time using the **TuneUp** button under the Options section. Or you can automate this process via the provided batch file script at:

```
C:\Program Files\GenevaLogic\Print-Limit\Scripts\addnewuser.bat
```

This script is 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 administrator privileges.

14. Installation Troubleshooting

Print-Limit does not detect jobs that are 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, Print-Limit has no way of knowing who submitted the print job. With system policies, you can make logging on to the domain mandatory and eliminate this problem. Alternatively, printer permissions can be set on the print server to ensure only valid domain users may print.
- The client computer may be configured to print directly to the network interface printer. Verify that all network clients are configured as outlined in *Network Configuration* on page 6. All print jobs must pass through a print server running Print-Limit.

Print-Limit does not work after the installation. What do I do?

Restart the print server. The Print-Limit service restarts automatically. This resolves most installation issues.

I have set up a version of Print-Limit for remote administration. A message informs me that I don't have administration access to the user database.

This message appears if Print-Limit 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, a message in the Print-Limit Event Log informs me that the printer language is not recognized.

or

Print-Limit does not count pages correctly.

Print-Limit 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 the PCL or Postscript driver. We recommend you try the following problem resolution actions in this order:

1. Install postscript drivers if they are 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 Microsoft Windows CD. Print-Limit supports the majority of drivers distributed with recent Windows releases.
3. Read *Appendix I—Setting Up Printers*.

If your printer does not support PCL or Postscript, contact Technical Support.

In North America	**All Other Locations**
866-725-7803 (toll free) Our hours are 7:30 AM–4:30 PM Pacific Time.	Outside of North America, the technical support of our products is provided through our international network of distributors and resellers. Please contact the local GenevaLogic distributor in your area. For a list of distributors, visit our international support page at www.genevalogic.com.

15. Frequently Asked Questions

General

Print-Limit screen-shots show a dollar sign ($) currency symbol. My country uses a different symbol.

Print-Limit uses the currency format defined in the local settings of your Windows operating system. You can change this setting in the **Regional and Language Options** window available from the Windows Control Panel.

Can I install Print-Limit on a standalone system or peer-to-peer network?

Yes, as long as the system is running a Windows 2000, XP, 2003 or Windows NT operating system. When you install Print-Limit on a standalone system or peer-to-peer system hosting a printer, select the **Get User information from this computer** in the Setup Wizard.

What hardware is recommended?

We recommend Postscript, PCL or compatible networked printers. 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 Print Server boxes. These can usually be purchased for under US$100. Parallel Port connections that direct to either the print server or to network clients are also supported, however this is not the preferred option.

Does Print-Limit slow printing?

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

What printers are supported?

Print-Limit works with the majority of printers including printers that support:

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

Does Print-Limit support different charging prices for color, duplex and different page size printing?

Yes. Print-Limit 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 management capabilities of Print-Limit make it suitable for both simple and complex programs.

Installation

Can I reinstall Print-Limit and retain my user account values?

Print-Limit is designed to allow "install over the top" upgrades, however we advise against this in a production environment. Unlike desktop applications, servers are multi-user environments and often DLLs or components can be locked by other applications or users, preventing a complete upgrade. We recommend that you uninstall and reinstall Print-Limit as outlined below.

The process for upgrading Print-Limit depends on whether you need to retain data between upgrades:

- If you do not need your current data, use the Simple Upgrade process.
- To save your existing data, use the Standard Upgrade process.

Simple Upgrade Process

The simple upgrade process is appropriate if you do not need to retain any previous data (users, printers, etc). This is recommended in the following situations:

- It is the end of the school year and you no longer need this information.
- You are upgrading to a licensed version of Print-Limit after running a trial version and the data is not important.

To perform the simple upgrade process (suitable for all versions):

1. Schedule approximately 10 minutes downtime.
2. As a precaution, back up the entire Print-Limit directory before you upgrade.
3. Using Windows **Add or Remove Programs,** uninstall Print-Limit.
4. Restart the server. (Unlike a desktop application, Print-Limit can still be in use and files locked while you uninstall. When you reboot the server, these files are released.)

5. Install Print-Limit according to the directions on page 8.
6. Start Print-Limit and complete the setup wizard. Add your printers and assign costs and other settings as appropriate.
7. Enter your registration key under the **About** section.

Standard Upgrade Process

We recommend the standard upgrade process when you want to save existing information about your user balances, printers, print logs, and PrintCards.

1. Schedule approximately 15 minutes downtime.
2. Copy the following files to a safe place on the hard drive. As a precaution, we recommend that you back up the whole Print-Limit directory to preserve files, such as your custom reports, during the upgrade.
    - C:\Program Files\GenevaLogic\Print-Limit\Database\pcuserdb.mdb
    - C:\Program Files\GenevaLogic\Print-Limit\Database\printerdb.mdb
    - C:\Program Files\GenevaLogic\Print-Limit\Logs*.mdb
3. If you use the Print-Limit Web Tools interface, then you must shut it down. This ensures that IIS does not lock any Print-Limit files.
4. Using Windows **Add or Remove Programs,** uninstall Print-Limit.
5. Restart the server. (Unlike a desktop application, Print-Limit can still be in use and files locked while you uninstall. When you reboot the server, these files are released.)
6. (optional) Manually delete any files that remain in C:\Program Files\GenevaLogic\Print-Limit*.
7. Install Print-Limit according to the directions on page 8.
8. Before you run Print-Limit for the first time, copy the pcuserdb.mdb file and other files that you backed up in step 2 over the new files created during the installation.
    - C:\Program Files\GenevaLogic\Print-Limit\Database\pcuserdb.mdb
    - C:\Program Files\GenevaLogic\Print-Limit\Database\printerdb.mdb
    - C:\Program Files\GenevaLogic\Print-Limit\Logs*.mdb
9. Run Print-Limit and complete the setup wizard. Your users, printers and PrintCards will be upgraded. Update the other Print-Limit options to meet your requirements.
10. Enter your registration key under the **About** section.

Why is it not recommended to use a PC as a network interface for a parallel port printer?

You can use any Windows computer 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 Print-Limit, as print jobs pass via the print server. However, this arrangement is less secure than using a network printer; a client can be quickly reconfigured to print directly to the interfacing computer, bypassing the print server and Print-Limit.

The chance of a user bypassing the print server can be minimized with the following strategy. (This applies only to Windows 9x operating systems):

1. Install the parallel port printer on the interfacing computer.

    8. Share the printer with a secret invisible name such as cantseeme**$** The dollar sign ($) makes it invisible to network browsers.
    9. Capture the printer on the print server by adding a new network printer with the UNC \\computername\cantseeme$.
    10. Share this printer on the print server to make it available to your network users.

Now a user must use the invisible name before he or she can reconfigure a client to bypass the print server.

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

Operation

How do I assign credit to multiple users at once?

1. From the console, click the **Groups** icon.
2. Under **Group Level Functions,** click the **Allocate Funds** button.
3. Select a network group from the list.
4. Enter a credit amount for the group in the **Set Credit** box.

Tip: You can also enter additional credit for the group in the **Add Credit** box.

How do I set multiple users to unrestricted?

1. From the console, click the **Groups** icon.
2. Under **Group Level Functions,** click the **Allocate Funds** button.
3. Select a network group from the list.
4. Select the **Change Privilege** box and choose **Unrestricted** from the list.

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

Yes. Print-Limit does not interfere with Windows permissions. You may restrict printing on any printer by setting share permissions in the printer properties. Other printers function and apply charges as normal.

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

Copy the joblog.mdb file from the Print-Limit program folder on the print server and paste it to a network workstation with Microsoft Access 2000 installed. The copy contains a snapshot of the data.

Advanced Operation

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

Print-Limit temporarily pauses all print jobs while they are analyzed. A message appears in the event log if auditing of printer events is selected. To turn off printer auditing:

1. In the Windows Control Panel, open the Printers folder.
2. On the **File** menu, select **Server Properties**.
3. On the **Advanced** tab, clear the **Log spooler information events** check box.

How can I prevent users from bypassing the print server?

The only way to bypass the print server is to configure a client to print directly to a network printer. Connecting to a network printer usually requires special setup software supplied by the hardware manufacturer, and other information, such as the printer IP address. You should ensure that this software and information is not readily available to your network users. If more security is required, investigate placing your printers on a TCP/IP subnet or configure routers to only forward TCP/IP packets from the designated print servers.

The Print-Limit database is lost, corrupt, or overridden. How do I restore a backup?

First, try the following:

1. Exit **Print-Limit** and stop the Print-Limit service on the print server.
2. Open each of the following files in Access 2000 and repair them. (From the **Tools** menu, point to **Database Utilities** and click **Compact and Repair Database**.)
    - Print-Limit/Logs/PrintJobLog.mdb
    - Print-Limit/Database/PrinterDB.mdb
    - Print-Limit Database/PCUserDB.mdb

If the above actions do not fix the corrupt databases, replace the database with a backup copy. (Print-Limit saves a dated copy of the database in the Print-Limit program folder during the TuneUp process). To replace the corrupted database with the latest backup:

1. Exit **Print-Limit** and stop the Print-Limit service on the print server.
2. Delete the corrupt database located at: C:\Program Files\GenevaLogic\Print-Limit\Database\PCUserDB.mdb

    11. Copy latest backup file at: C:\Program Files\GenevaLogic\Print-Limit\Backups and paste it to C:\Program Files\GenevaLogic\Print-Limit\Database.

    12. Rename the database file PCUserDB.mdb.

    13. Restart the Print-Limit service.

You may have other backup solutions operating on your print server and wish to use another option to replace the corrupt database. Ensure the Print-Limit service is stopped before you replace any Print-Limit *.mdb file.

How do I upgrade my Page Counting Machine?

The Page Counting Machine (PCM) is the component responsible for counting pages and detecting other page attributes such as size, duplex, and grayscale modes. GenevaLogic provides PCM updates periodically to support new hardware without the need to reinstall Print-Limit. For information on the latest PCM, visit www.genevalogic.com.

APPENDIX I—Setting Up Printers

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

1. Set up printers on the server (the print server).

14. Install Print-Limit and add the printers to the Print-Limit charging list.

15. Share the printers.

16. Configure network clients or 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:

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

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 as network printers and add them using a Standard TCP/IP Port.

It is important that you set up all printers as local printers. Printers hosted on other systems connected to the server using the \\servername\printername network printer method do not work. Printers hosted on remote systems should either be set up again 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 are used. Most high-volume printers now come with built-in network cards and use the common method of connecting via a standard TCP/IP Port.

For a step-by-step guide on how to set up particular printers see the following sections:

To add 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 an administrator.

17. From the Windows Control Panel, open the Printers folder.
18. Double-click **Add Printer** to open the Add Printer Wizard, and then click **Next**.

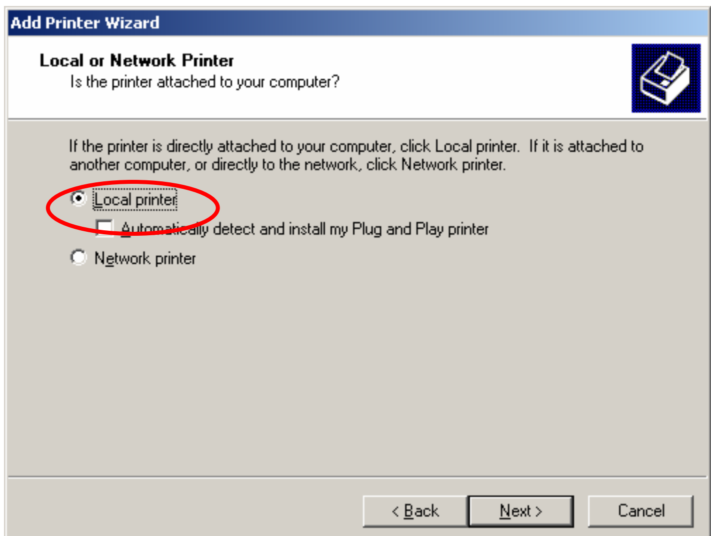


Figure 38: *Install as a local printer*

19. Select the **Local printer** option, clear the **Automatically detect and install my Plug and Play printer** check box, and then click **Next**.
20. Select the **Create a new** port option, and then select **Standard TCP/IP Port** from the list of types.

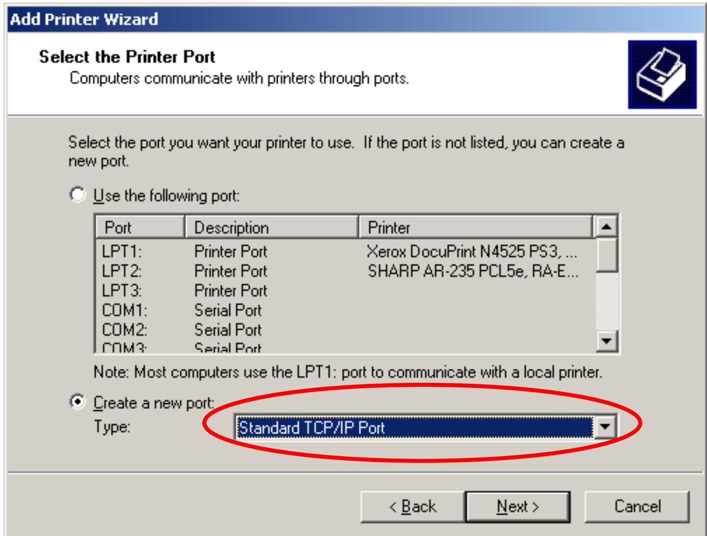


Figure 39 *Select Standard TCP/IP Port*

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

22. Follow the instructions on the screen to finish adding 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 manufacturer's setup procedure.

Option 2 Manually set up the printer using supplied drivers.

1. Following the printer manufacturer's instructions, connect the printer to the appropriate port on your computer.

23. From the Windows Control Panel, open the Printers folder.

24. Double-click **Add Printer** to start the Add Printer wizard, and then click **Next**.

25. Select the **Local printer** option, clear the **Automatically detect and install my Plug and Play printer** check box, and then click **Next**.

26. Follow the instructions on the screen to finish setting up the local printer. Select the printer port, select the manufacturer and model of your printer, and type a name for your printer.

Adding Remote Desktop Printers

Networks tend to grow in a dynamic fashion and many organizations may have a number of printers scattered throughout the network. Some of these printers may be standalone (non-networked) printers connected directly to workstations. These printers are sometimes referred to as desktop printers or peer printers. You can track desktop printers using Print-Limit in one of the following ways:

Option 1: Connect the printer using the process outlined in *Appendix II—Setting Up Remote Desktop Printers*. This option is commonly adopted and is suitable for many networks; however, this can be a complex setup.

Option 2: Network the printer using a hardware print server hub. This option is a simple and robust solution but does require the investment in additional hardware.

Option 3: Set up the system as a Secondary Print-Limit Server. This option should be considered if this system hosts a number of printers, for example, five or more.

Refer to *Appendix II—Setting Up Remote Desktop Printers* for further details on the suggested setup method.

APPENDIX II—Setting Up Remote Desktop Printers

Print-Limit 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 that are mapped onto the central server. This ensures that documents are detected by Print-Limit.

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 a normal network printer and shared back to the workstation or other workstations. This technique uses the built-in Windows support for TCP printing also referred to as LPR/LPD printing support. Follow these set up directions in full and repeat the process for each desktop printer throughout the network.

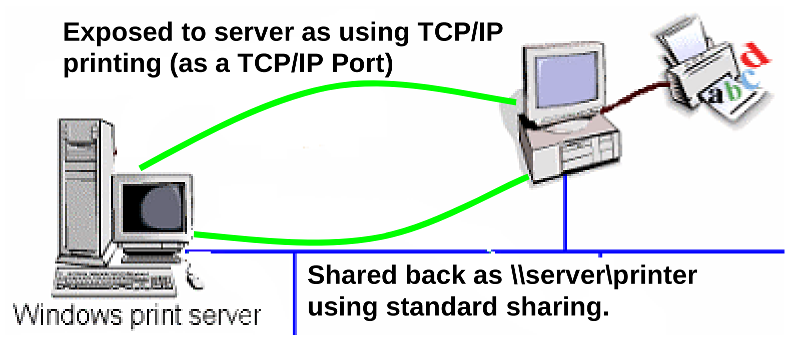


Figure 40—*Desktop printers exposed using TCP/IP Printing and captured on server*

Setup Method

On the workstation with desktop printer attached

Install TCP/IP print services

1. Have the Windows installation CD on hand.

27. **Log on** as a local administrator.
28. Navigate to your Network Connections or right-click the My Network Places icon and select **Properties**.
29. On the **Advanced** menu, click **Optional Networking Components**.
30. Select the **Other Network File and Print Services** check box.

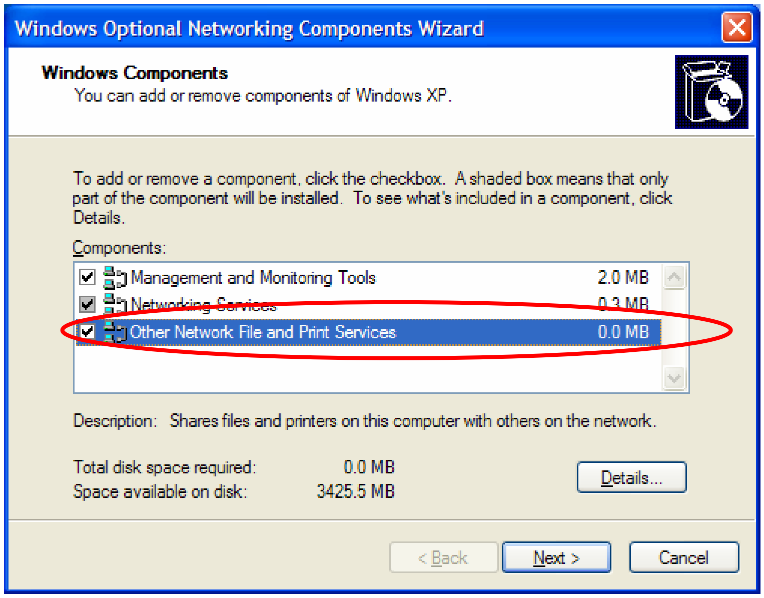


__Figure 41 :__ Install TCP/IP print services

31. Click **Next** and **OK**.
32. Reset the system if requested
33. Open the Computer Management window (available from the Administrative Tools in the Windows Control Panel).
34. Double-click **TCP/IP Printing Services** and set the startup type to **Automatic**.

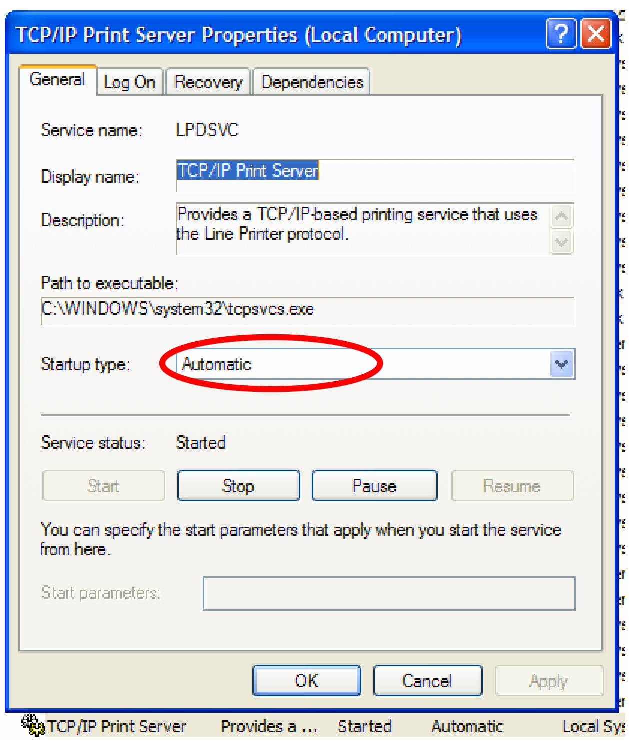


__Figure 42 :__ Set TCP/IP print server to start Automatically

Install printer and set permissions

1. Install the printer using the manufacturers install method or drivers.

35. Verify that the printer is not shared. (In the Windows Control Panel, open the Printers folder. Right-click the printer icon and select **Sharing**.)

36. Select the **Security** tab and remove the Everyone group. This ensures that standard users logged onto the workstation do not have direct access to the printer and must print via the server.

37. Rename the printer with a meaningful name.

Windows XP Firewall (only if running Windows XP SP2)

The Windows XP SP2 firewall is now enabled by default and blocks access to the printer. You must define an exception rule.

1. Navigate to your Network Connections or right-click the My Network Places icon and select **Properties**.

38. In the Network Connections window, right-click the network adaptor responsible for network communications and select **Properties**.

39. On the **Advanced** tab, click the **Settings** button under **Windows Firewall**.

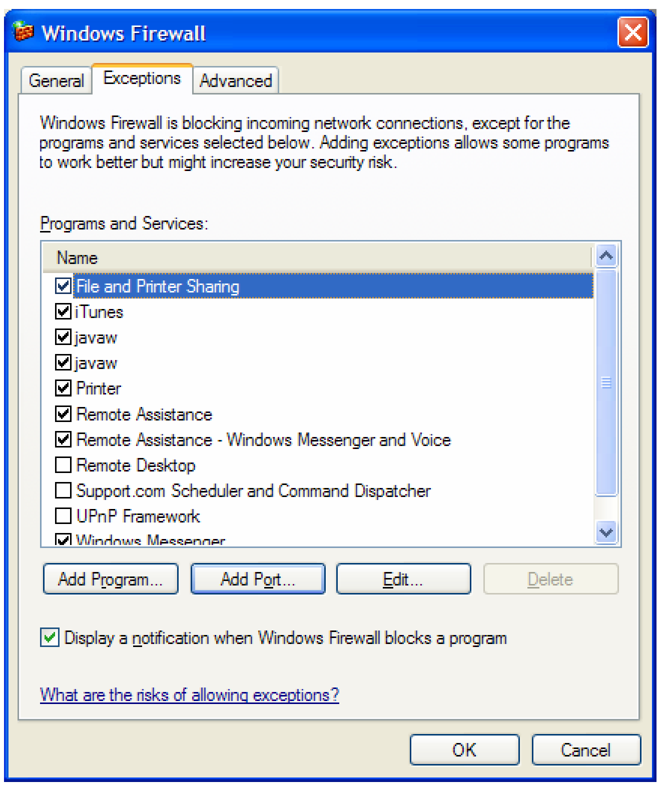


Figure 43: *The Windows XP Firewall Exceptions tab. Click the* ***Add Port*** *button.*

40. On the **Exceptions** tab, click **Add Port**.

41. Enter a name for the printer and a port number of 515. Select the **TCP** option.

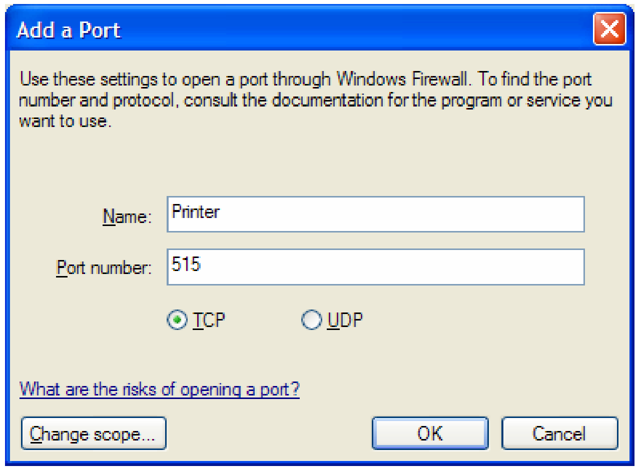


Figure 44: *Adding a firewall exception on port 515.*

42. Click **OK** and close all open windows.

On the print server (server running Print-Limit)

Install TCP/IP print services

1. Have the Windows installation CD on hand.

43. Log on to the server as an administrator.

44. Navigate to your Network Connections or right-click the My Network Places icon and select **Properties**.

45. On the **Advanced** menu, click **Optional Networking Components**

46. Select the **Other Network File and Print Services** check box.

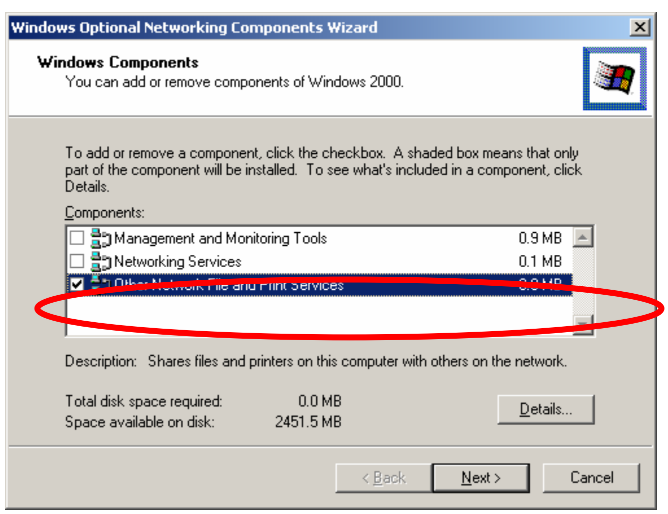


Figure 45: *Install TCP print support on the server*

47. Click **Next** and **OK**.

48. Reset the system if requested.

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

1. Log on to the server as an administrator.

49. From the Windows Control Panel, open the Printers folder.

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

51. Select the **Local printer** option, clear the **Automatically detect and install my Plug and Play printer** check box, and then click **Next**.

52. Select the **Create a new port** option, and then select **LPR Port** from the list of types.

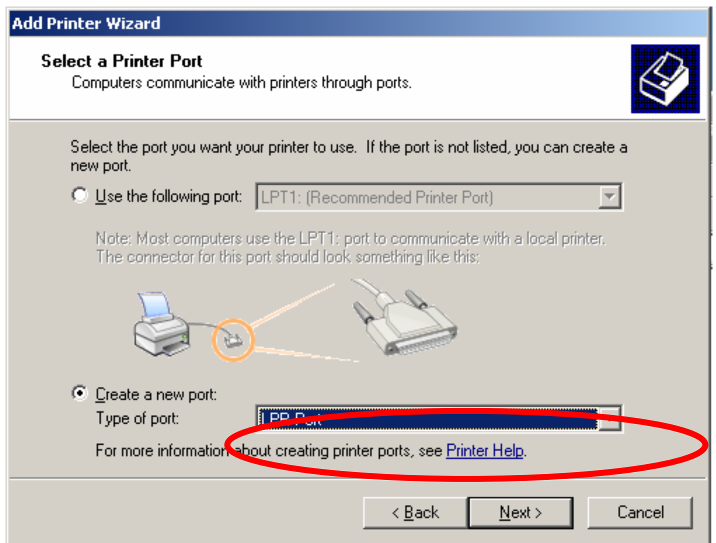


Figure 46: *Select port type of LPR Port*

53. Enter the name of the workstation hosting the printer and the name associated with the printer (step five in *Install printer and set permissions*).

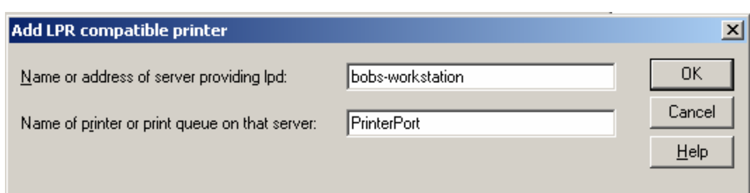


Figure 47: *Enter the name of the workstation and printer previously set up*

54. Follow the instructions on the screen to finish adding the printer.

Share the printer

You can now share the printer to all workstations and users, including the workstation originally hosting the printer. To do this, use standard Windows networking procedures.

1. Log on to the server as an administrator.

55. From the Windows Control Panel, open the Printers folder.

56. Right-click the printer and select **Sharing**.
57. Allocate an appropriate share name to the printer.

Add the printer to Print-Limit and test

1. From the console, click the **Charging** icon.

58. Click the **Select Printers** and add the printer to the charging list.
59. Assign an appropriate cost.
60. Log on to a workstation, connect the shared printer, and print test documents to verify that Print-Limit tracks printing correctly.

APPENDIX III—Printer Configuration & Hardware Guide

The following guide should be used if you experience any problems with the page count detection or you want to check hardware compatibility.

Page Description Languages (PDLs)

Print-Limit correctly handles 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)

  Note: Print-Limit may experience difficulties with some proprietary GDI printers including budget LEXMARK and Brother printers. Some Brother printers however work correctly if you use Postscript or PCL compatible drivers.

Many printers come with a selection of print drivers. We recommend that you install a single driver, Postscript if available. Below is a list of recommended drivers in order of preference:

1. Postscript

   61. PCL 6

   62. PCL 5, 4

   63. Appropriate driver selected directly off the Windows CD

   64. Ricoh RCPS

   65. ESC/PAGE and ESC/PAGE-COLOR

Connection Methods

You should connect printers directly to the system running the Print-Limit 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 built-in network card
- Standard TCP/IP port via hardware “print server” network hub
- Using the method outlined in *Appendix II—Setting up Remote Desktop Printers.*

Important: Do not configure network clients to connect directly to the printer using one of these methods. The network clients should print to the printer shared from the server running Print-Limit.

Unsupported Connection Methods

Some printers offer programs that make 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 that has LanManager connectivity also supports standard TCP/IP Port or LP over TCP. We recommend these connection methods over LanManager. In most cases using TCP involves adding a new local printer and selecting a standard TCP port. Refer to your hardware documentation for more information.

Notes on Individual Printer Models and Manufacturers

Hewlett Packard (HP) Laser Printers

Print-Limit works with all HP laser printers produced over the last 7 years. Where possible, we recommend the Postscript drivers or recent PCL drivers.

HP Ink Jets—Deskjet

Print-Limit works with most Inkjet printers. Some older printers, such as DeskJet 640C, use nonstandard PCL drivers. Print-Limit can have problems analyzing documents printed from Windows 9X based clients.

Epson

Print-Limit works with the current range of AcuLaser, AL, and EPL mono and color laser printers. The majority of inkjet printers produced over the last 7 years that support ESC/P2, ESC/PAGE and ESC/PAGE-COLOR work. In some models Print-Limit may not correctly detect paper size.

Canon

Print-Limit works with Canon laser printers and copiers. Print-Limit may have issues with the low cost Bubble Jet printers.

Ricoh

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

Kyocera

Kyocera laser printers have a Postscript driver range referred to as KPDL. These drivers are compatible with Print-Limit. The Kyocera PCL drivers occasionally use non-standard language extensions labeled as PCL compatible. We recommend the Postscript (KPDL) drivers.

Lexmark

Print-Limit works with the current range of mono and color laser printers. Postscript drivers are recommended. The budget inkjet printers use a proprietary GDI printer language which, depending on the model, can cause problems.

Minolta-QMS

Print-Limit works with all high-end laser printers. Use the Postscript driver option.

OKI

The OKI mono and color laser printers support a number of compatible print languages. We recommend the Postscript Level 2 driver option.

Xerox/Tektronix

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

APPENDIX IV—Miscellaneous Information

Network Shares Created during Installation

- **PCSetup**—Read Only Visible Share. This share may be removed at any time without upsetting Print-Limit. It provides assistance with network workstation installations.
- **PCDB$**—Read Only Invisible Share. The User Inquiry Tool uses this share to extract the user's current account balances.
- **PCDBA$**—Administrator Only Invisible Share. This share allows Print-Limit 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 Print-Limit's automatic log importing process.

Print-Limit Service Command Line Options

The PCService executable (.exe) runs as Windows services. You may add or remove this service from the system services list with the following command line options:

Install

- PCService.exe –install

Uninstall

- PCService.exe –uninstall

Note: You must stop the services before you uninstall them.