PaperCut NG

Education Getting Started Guide - Windows

Revision date: 5/4/2017

Notice

While *every* effort has been taken to ensure the accuracy and usefulness of this guide, we cannot be held responsible for the occasional inaccuracy or typographical error. If you do find an error, please let the PaperCut Software Development Team know.

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1. Introduction

PaperCut NG is a feature-packed application designed to meet the print management requirements of all types of organizations.

As with any software solution, there are many different installation and configuration variables that can affect how you deploy, license, and use PaperCut NG. The simplest and most common installation is to install PaperCut onto a site's print server. This is a single Application Server, single print server deployment and suits the majority of organizations.

This guide describes how to implement PaperCut NG in an education organization on a Windows server with the following requirements:

- Secure Print Release and Find-Me printing is used for most print jobs.

  > **Note:**
  > Secure Print Release is optional. If it is not required by your organization, simply skip the Configure Secure Print Release

- Print policies, such as forcing duplex printing, or forcing grayscale printing are implemented.
- For students:
  - Students are allocated an initial credit but must pay for their printing once they use up the credit.
  - Students cannot print if they have a zero balance.
  - Student print jobs are always charged to their personal account.
  - A popup confirmation prompt showing the total print cost is displayed before students' printing proceeds.
- For staff:
  - Staff have no financial restrictions on their ability to print.
  - All staff print jobs are charged to an account.
  - Staff can select the shared account (for example, faculty or department) to which a print job will be charged when they print.
- Reports on the charges against accounts and groups are delivered to someone within the organization at regular intervals (e.g. monthly).
- Reports on the printer usage, individual user usage, and environmental savings are also automatically generated and delivered on a regular basis.

PaperCut NG offers many other configuration options that can be tweaked to suit your needs. For more information, see the PaperCut NG Manual.

2.   Preparing for the implementation

Before you install PaperCut NG, make sure your network environment is ready and you have all of the information you need. You should:

- Check system requirements
- Determine printing costs
- Confirm user groups
- Identify department / subject shared accounts
- Confirm internal office shared accounts
- Select student payment options
- Restrict Windows print queue security permissions

2.1.   Check system requirements

PaperCut NG requires a correctly configured network environment. Before you install PaperCut NG, verify the following system requirements:

- **Operating system:**
  - The operating system version is supported and patches are up-to-date (see System Requirements).
- **User accounts:**
  - Each user has their own domain account and password. By default, PaperCut NG does not maintain its own users and passwords, and instead uses the operating system log on accounts.
  - You have selected a domain user account to use as a test user.
  - You have the username and password for both network and local Administrator accounts.
- **Printers:**
  - Check that all printers are configured correctly and work *before* installing PaperCut NG. PaperCut NG works with the majority of printer hardware without any additional configuration. PaperCut NG works with any postscript, PCL5, or PCL6 printer driver. For a list of all compatible printer drivers, see Supported Printers.
- **PaperCut NG Application server**
  - Check the Sizing guide for details of the server requirements.
  - For print security, all printers must be hosted on a print server. We suggest you also install the PaperCut Application Server on the print server. If you choose to install the Application Server on a different server, or you have more than one print server, you will need to install the PaperCut Secondary print server software on each print server.

2.2. Determine printing costs

Before you install PaperCut NG, you should determine the costs to apply to each print job. PaperCut NG supports a number of different pricing models. The most popular pricing models are:

- **Simple**—a flat rate is applied to all pages (i.e. $0.50 per page)
- **Standard**—pricing is based on combinations of page sizes, color makeup, and discounts for duplex. A matrix, such as the following, will help capture the pricing model.

	Color	Grayscale	Color Duplex	Grayscale Duplex
A4	$0.50	$0.10	$1.00	$0.20
A3				

If required, you can set different costs for staff and students. For example, staff charges might be at cost and student prices might be higher. To do this, you would apply a percentage cost markup or markdown to the relevant group. You can either:

- set the cost structure for students, allowing a profit margin, and then apply a discount for staff prices.
- set the cost structure based on actual costs, and then apply a markup for students.

You cannot set up a different cost structure for different groups.

> ✎ **Note:**
> Educational institutions offering classes such as Architecture, Design, or Art, should also consider the charges for using Large Format Printers.

2.3. Confirm user groups

At a minimum, your user directory (for example, Active Directory) should have a group for staff and a group for students, although you can have any number of groups. These group structures are imported into PaperCut NG when you synchronize your user directory.

2.4. Identify department / subject shared accounts

Prepare some department or faculty accounts to add into the system. Preparing a list of accounts in advance makes the installation easier. An export from a Finance Package is an excellent source.

> ★ **Tip:**
> Automating this process where possible ensures new accounts flow between systems. Ideally, an export would be scheduled to meet the chosen format so you do not have to repeat this process manually at given intervals. You can also see if an interface has been written by one of our Authorized Solution Centers (ASCs).

If you have only a small number of account codes, you can manually add them to the system. If you have a large number of accounts, you can use Excel to create a tab delimited file and import it into PaperCut NG.

> **Important:**
> Your Excel spreadsheet must be saved in the following format:
>
> - Text (Tab delimited) (*. txt)
>
> After you have installed PaperCut NG, you can find some examples under:
>
>   [app-path]/server/examples/import/shared-accounts/

PaperCut NG allows for a hierarchy of accounts. For example, the Science faculty might have a number of different subject areas including Chemistry and Biology.

	A	B	C	D
1	Business	Accounting	Y	BUSACC
2	Business	Finance	Y	BUSFIN
3	Business	Management	Y	BUSMAN
4	Business	Marketing	Y	BUSMAR
5	Science	Chemistry	Y	SCICHE
6	Science	Biology	Y	SCIBIO
7	Science	Physics	Y	SCIPHY

> **Note:**
> - **Column A**—The name of this account's parent. If all you want is a list of valid faculty or department codes to choose from, a list in Column A is sufficient.
> - **Column B**—The name of a sub-account (1 level deep only). This is not required if you only want a list of valid
> - **Column C**—Whether or not this account is enabled.
> - **Column D**—An optional short version of the code. You can use it in place of Column B if you prefer a short code instead of a description.
>
> For a full list of shared account fields that can be imported, see Batch account import file format.
>
> For more examples of import formats, see Account import formats.

> **Tip:**
> Consider adding a test user for your testing so you do not affect any real accounts.

2.5. Confirm internal office shared accounts

Add some codes for the internal office accounts to your Excel spreadsheet of accounts. Not all jobs are chargeable to an account (for example, invoices, payslips, newsletters etc).

	A	B	C	D
1	Office	Newletter	Y	OFF0001
2	Office	Research	Y	OFF0002
3	Office	Marketing	Y	OFF0003
4	Office	Invites	Y	OFF0004

2.6. Select student payment options

PaperCut NG provides a number of payment options for students:

- **Quota model**—students are allocated a regular allowance.
- **Upfront payment model**—students start off with a balance of zero and need to add money to their account before they can print.

Quota model

Under this model, students are allocated a "budget" on either a daily, weekly, or monthly basis. It is then the user's responsibility to manage their own usage to stay within their allocated allowance. When the allowance is exceeded, access to printing resources is denied. Some organizations allow users to request additional quota with approval, or they can sell users additional quota using TopUp Cards.

> **E** **Example:**
> Smithtown High School provides students with $5.00 a week to cover printer use. If users need additional quota, they can purchase a TopUp card from the school cafeteria or library.

Upfront payment model

In this model, students start off with a balance of zero and need to add money to their account before they can print.

Students can add money to their account in the following ways:

- **Manual payments**—cash payments manually entered by a SysAdmin in the Admin web interface.
- **Topup Cards**—students can buy a voucher of a particular value and apply the credit to their account.
- **Online payment gateways**—PaperCut NG can be integrated with your preferred payment gateway, such as PayPal, Cybersource, Authorize.net, and many more. (see Online Payment Gateways)
- **Cash payment hardware**—dedicated pay boxes, kiosks, or coin/note boxes.

2.7. Restrict Windows print queue security permissions

When using Secure Print Release or account selection popups, PaperCut pauses jobs on the Windows print queue prior to printing. It is important that the queue is secured to prevent users from resuming jobs themselves and bypassing PaperCut.

There are two ways a Windows print queue can be secured:

- Restrict the print queue security permissions to prevent users from performing management functions.
- Configure the queue using the PaperCut TCP/IP Port.

For more information, see Print queue set up on Windows - forgotten task!

To restrict security permissions for a queue:

1. Log on as an Administrator to the server hosting the printers.
2. Open the printer configuration screen: **Start > Printers**
3. Right-click a printer; then select **Printer properties**.
4. Select the **Security** tab.
5. Select the **CREATOR OWNER** user.
6. In the **Permissions** area, clear both the **Allow** and **Deny** check boxes for **Manage Documents**.
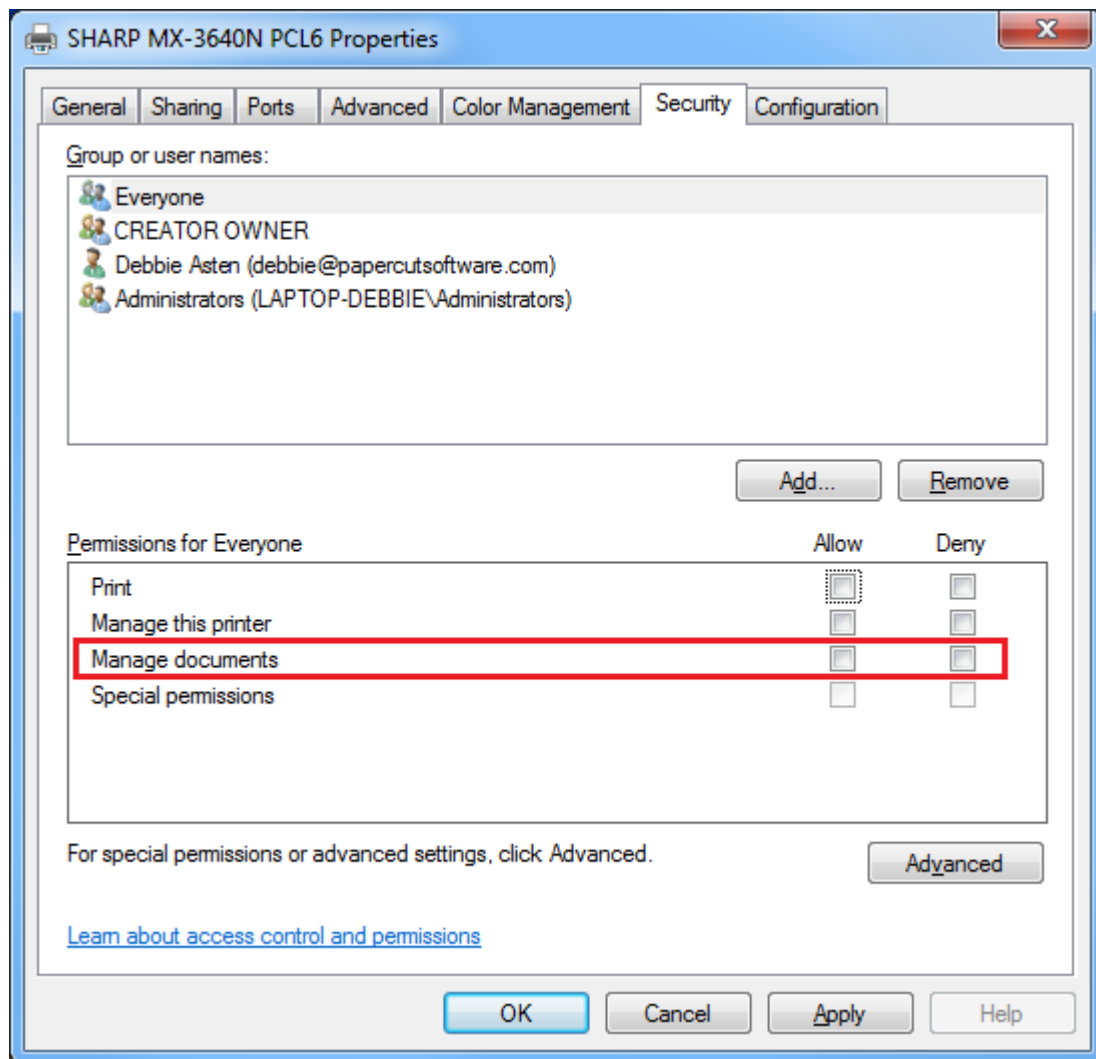
7. Click **OK**.

8. Perform these steps for each of the monitored printers.

> ⭐ **Tip:**
> When using Windows 2008 Server, use the Server Manager, navigate to the Print
> Management Console and globally set the security permissions by right-clicking the **Print
> Server(s) > Properties > Security** and editing the permissions there. This applies only
> to printers added *after* the global permissions are changed, not for pre-existing printers.

> ▶ **Important:**
> In order to use this method with Windows Server 2012 and 2012R2, Microsoft released a
> patch for Windows Server 2012 and 2012R2. As always, please consult your Microsoft
> experts as to the suitability of this patch.

3. Installing PaperCut NG

In an education installation, you need to install the following components:

- Install the Application Server
- Install the User Client
- Upsize to an external database (RDBMS) (optional)

These steps should not affect your business, but it's best to alert users there will be changes happening to the printing system for the duration of 30 minutes.

3.1. Install the Application Server

Installing the application server involves the following steps:

- Download and install PaperCut NG
- Run the Configuration Wizard
- Check printer configuration

Step 1: Download and install PaperCut NG

PaperCut NG is supplied as a standard Windows `pcng-setup-<version>.exe` install program. You can download the latest version from https://www.papercut.com/products/ng/download/. This installer automatically detects whether your operating system is 32-bit or 64-bit and installs a version of the software optimized for your system. After the download is complete, run the setup wizard as an administrator. A system restart is not usually required, but you should install on live production systems during periods of low activity, for example, not during backup operations or other administration activities.

1. Double-click the `pcng-setup-<version>.exe` install program.
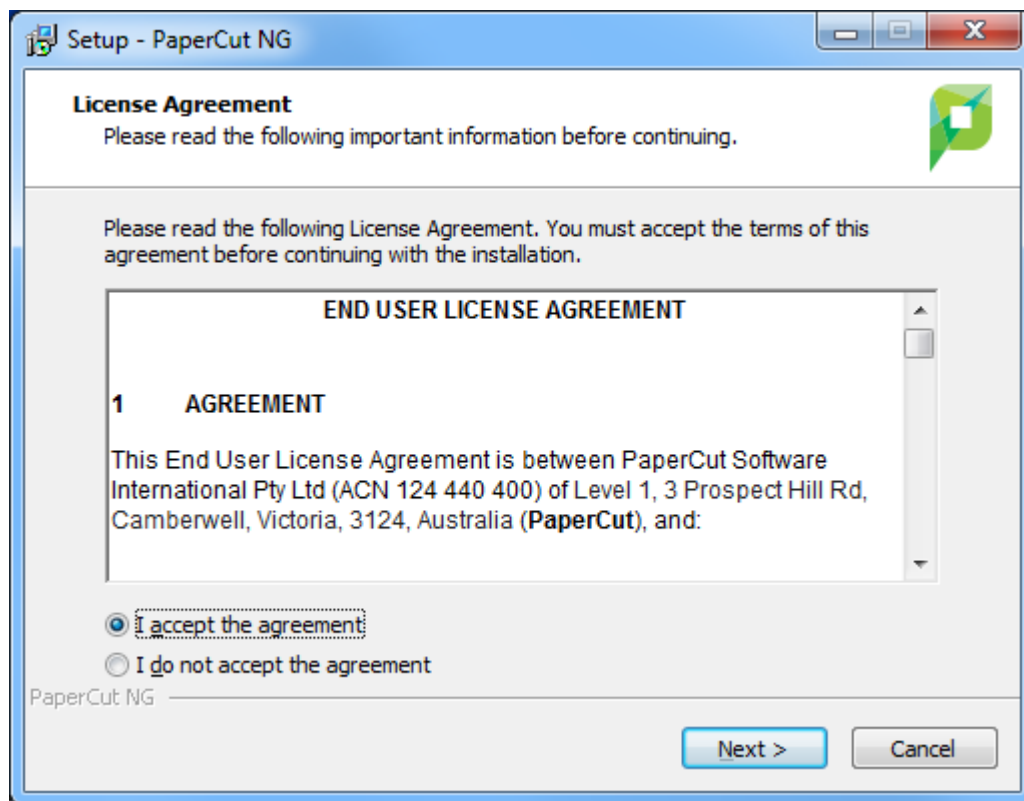
2. Read the End User License Agreement (EULA).

3. Select **I accept the agreement**; then click **Next**.

4. Read the installation information; then click **Next**.

5. Select the installation location; then click **Next**.

6. Select **Standard installation (primary server)**; then click **Next**.

7. Select whether or not you want to create a desktop shortcut; then click **Next**.

8. Click **Install**.

9. Click **Finish**.

Step 2: Run the Configuration Wizard

After you install PaperCut NG, a web browser is displayed with the PaperCut NG **Configuration Wizard Welcome** screen.

> **Note:**
> If the **Configuration Wizard Welcome** screen is not displayed, you can access it by going to the following URL:
>
> - `http://localhost:9191/admin`

1. **Administrative password**

a. Complete the following fields:

- **Password**—enter the master password for the main in-built admin account. This password is independent of the operating system or domain passwords. The password must be at least six characters.

> ★ **Tip:**
> Keep this password secure. If you forget your password, you can reset it. For more information, see Resetting the Admin Password.

- **Verify password**—re-enter the password.
- **Location**—select the system's physical location and language.

b. Click **Next**.

2. **Organization type**

The **Organization type** screen is displayed.

This selection determines which system defaults are used.

    a. Select **Education**.

    b. Click **Next**.

3. ## Default cost for printing

The **Default costs for printing** screen is displayed.

> ▶ **Important:**
> For an education implementation, where users are charged for their printing, leave these values as zero during the implementation stage, otherwise, students will not be able to print as they cannot yet add credit to their account.

    a. Click **Next**.

4. ## Initial user credit

The **Initial user credit** screen is displayed.

a. Complete the following fields:

- **Initial user credit**—enter the amount of credit /quota each user will receive when the system is first enabled. You can change these settings after setup.

- **Deny access when users run out of credit/quota**—select this check box to prevent users from printing when they run out of credit/quota.

b. Click **Next**.

5. **User/group synchronization**

The **User/group synchronization** screen is displayed.

PaperCut NG extracts user information out of your user directory. PaperCut NG automatically tries to detect the available directory services, saving you hours of configuration time.

a. In **User source**, select the source of user data:

- **Windows Standard**

- **Windows Active Directory**

- **LDAP**

> ✏ **Note:**
> In a domain environment, **Active Directory (AD)** is the default option as this offers access to Organization Units, Nested Groups, and other AD features.

b. Select one of the following options:

- **Import all users**—import all domain user accounts. This includes all system accounts as well as user accounts. Importing all users is suitable for organizations that do not have user groups (user groups are not imported into PaperCut NG with this options), and does not have a large number of system account.

- **Import users from selected groups**—import users from selected user groups. This is useful when:

    - only a subset of users will use the printers

    - you want to report on individual user groups or apply different policies or pricing to different groups

    - you have many system accounts

c. Click **Next**.

6. **Confirm setup options**

The **Confirm setup options** screen is displayed.

a. Check the settings you have entered. If you want to change anything, you can return to any of the configuration screens to alter the options.
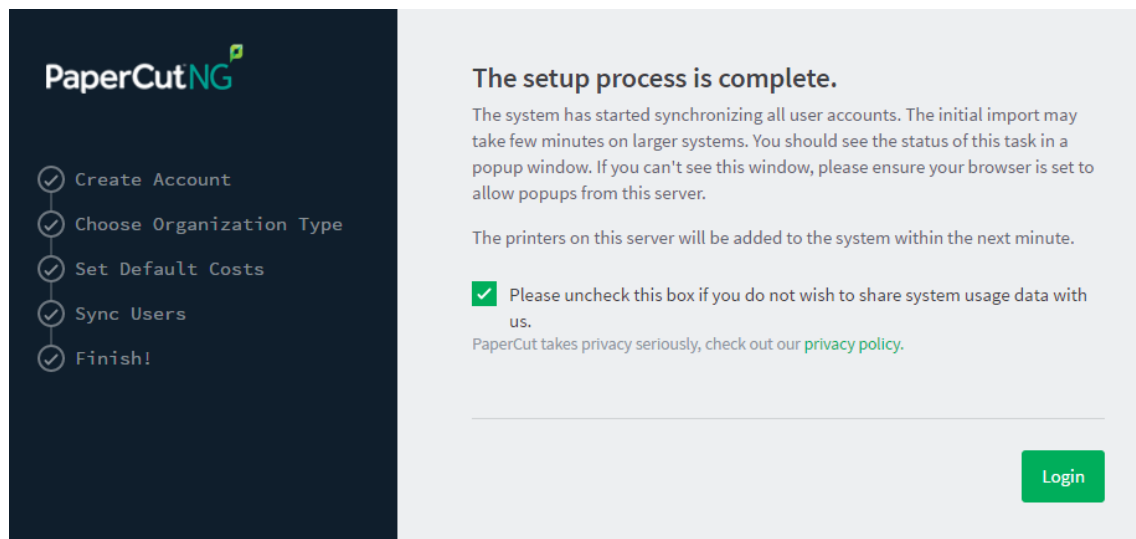
b. Click **Confirm**.

The **Initial user import** screen is displayed.

c. Click **Close**.

7. **Setup complete**

After completing the configuration wizard you are presented with a user synchronization status screen, showing the progress and results of the setup.

a. Click **Login** to access the Admin web interface and begin familiarizing yourself with the options and features available.

Step 3: Check printer configuration

PaperCut NG automatically detects the print queues on the print server on which PaperCut NG is installed. To view the printer list:

1. Click the **Printers** tab.
2. If the printers are not displayed, print a document. The first job triggers registration of the printer with PaperCut NG.

3.2. Install the User Client

The User Client facilitates the following tasks:

- Allow users to view their current personal account balance via a popup window.

- Display system messages, such as the "low credit" warning message or print policy popups.
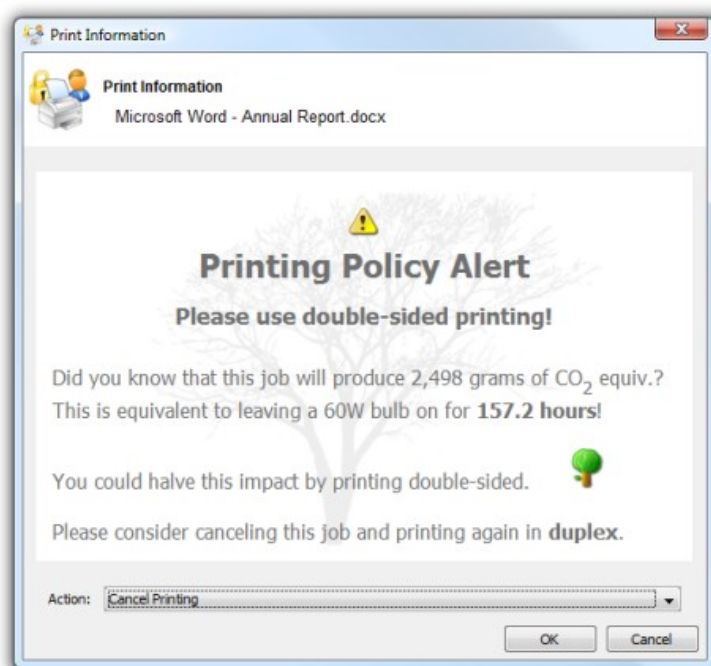
- Provide users with a "last chance" before printing, confirming what they are about to print.
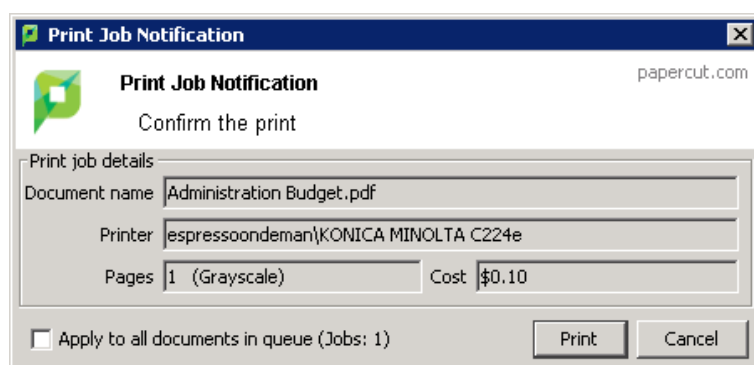
- Allow users to select shared accounts via a popup.

Step 1: Confirm that the User Client software is shared

The PaperCut NG User Client install package is located in the following directory:

```
\\[app-path]\client\win\
```

The directory is automatically shared in read-only form as `PCClient` as part of the install process.

1. Confirm that you can access the User Client software via the network.

Step 2: Deploy the User Client

You can deploy the PaperCut NG User Client to workstations using a variety of deployment methods. The deployment options are covered in detail in the `[app-path]\client\README.txt` file.
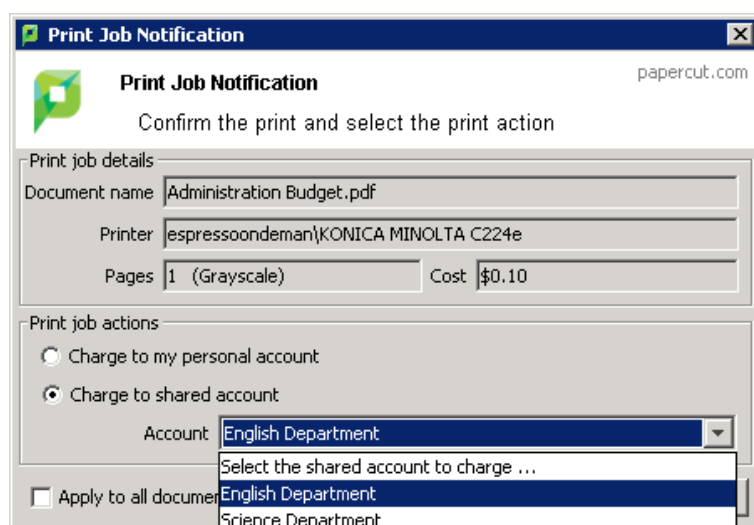
For an Education implementation, we recommend using the zero-install method of `pc-client-local-cache.exe`. This file first copies itself and associated files to the local drive and launches itself from there. This version has the advantage that any future start ups use the local copy, which minimizes network traffic. The cache is self-managing and kept up-to-date ensuring that any new versions of the client are automatically and transparently copied down to the client.

This method requires a globally writable cache directory. By default, the cache is created in a directory on the system drive (normally `C:\Cache`). You can specify an alternate cache with the `--cache` command-line switch. Ensure that standard users have write access to the system drive, or manually create the cache directory if required.

The recommended approach with Windows networks is the "zero install" method. This involves running the executable program directly off the server without needing a local install. This ensures the client software is automatically updated in conjunction with server updates.

1. Configure the workstations via group policy or otherwise, to run the client executable directly off the `PCClient` share.
2. Add the following line to your domain login script to launch `pc-client-local-cache.exe` on start up:
   ```
   cmd /c "start \\[servername]\PCClient\win\pc-client-local-
   cache.exe --silent"
   ```

For more information about deploying the User Client on other operating systems:

- Mac
- Linux

3.3. Upsize to an external database (RDBMS)

By default, PaperCut NG uses an internal database product known as Apache Derby. You might, however, consider running PaperCut NG on an external RDBMS if your organization:

- has existing database infrastructure and wants to consolidate all applications on the same database platform.
- has an existing database maintenance and backup procedure and wants PaperCut NG to take advantage of this.

- uses 3rd party reporting and analysis tools (like Crystal Reports or Microsoft Access) to view and analyze the PaperCut NG database.

- is very large and requires the performance benefits of a dedicated RDBMS. This also allows the database to reside on a separate server to PaperCut NG, which improves the system scalability.

The high-level steps to upsize the database are:

1. Stop the PaperCut NG Application Server
2. Perform a backup of the existing data
3. Create a new database in the external RDBMS
4. Configure the database
5. Change the PaperCut NG connection details
6. Initialize the new database
7. Load the data into the new database
8. Restart the application

This section provides detailed instructions for SQL Server. For more information about SQL Server Express, My SQL, PostgreSQL, and Oracle databases, see Upsize to an external RDBMS.

> **Important:**
> Each Application Server requires exclusive access to an external database. i.e. A single database cannot be shared between more than one Application Server. If you are running multiple Application Servers (e.g. a test and production instance), then each must have a separate database.

Step 1: Stop the PaperCut NG Application Server

Stop the Application Server. This allows you to back up the data, guaranteeing that all data is saved and ready to load into the new database.

1. Open the services control panel. (**Start > Control Panel > Administrative Tools > Services**)
2. Find the service named **PaperCut Application Server**.
3. Right-click the service.
4. Select the option you want to perform (e.g. Stop/Start/Restart).

Step 2: Perform a backup of the existing data

Perform a backup of the database. This data is loaded into the application in a later step.

To back up the database:

1. On the Application Server, open a command prompt. (If you see 'Access Denied' errors, run the command prompt as an Administrator).

2. Change (`cd`) to the server binaries directory. e.g.

   ```
   Windows: cd "C:\Program Files\PaperCut NG\server\bin\win"
   ```

3. Run the following command:

   ```
   db-tools export-db
   ```

   The output of the above command shows the name of the backup file.

4. Take note of the backup file name because it is required in a later step.

Step 3: Create a new database in the external RDBMS

This step differs depending on the external database you are using. It is assumed that the administrator knows how to create a new database. The following steps must be performed regardless of the chosen database:

1. Create a new empty database for dedicated use by PaperCut NG. When creating the database, make sure you select the correct character encoding for your language.

   > **Important:**
   > Create the database with a character encoding suitable for your language. For SQL Server, the character encoding is set in **Collation** on the new database screen. For other databases, such as PostgreSQL or MySQL, select a unicode character set (UNICODE or UTF8) that allows all possible characters to be stored.

2. Create a new database user (and password) for PaperCut NG to use to connect to the database.

3. Assign the appropriate permissions to the new user to give them full access to the new database (for example, permission to create/drop tables, and select/insert/update/delete in all tables).

> **Important:**
> Make sure you have enough disk space for the growth of your PaperCut NG database. A full disk can corrupt the PaperCut NG database. For more information, see
>
> We also recommend you set up notifications for low disk space as described here: Alert Email Notification through SCOM 2012 R2.

Step 4: Configure the database

Microsoft SQL Server provides enterprise class database performance. With this type of database, you should put in place a database re-index every month. This database optimization helps with general performance, and more specifically, large queries performed on the SQL database. These queries include Reporting, as well as Bulk Actions performed on multiple data points.

> **Important:**
> Ensure that SQL Server has the TCP protocol, and the server authentication option is set

> to **SQL Server and Windows Authentication**.
>
> The database user created for PaperCut NG should have only the minimum set of permissions required for the PaperCut application. The user should have full permissions to create/drop tables and have full access to any created tables. However, the user should not have permission to access other databases installed on the database server.

To configure Microsoft SQL Server, perform the following tasks on the machine with SQL Server installed:

Enable SQL Server authentication

PaperCut NG requires SQL Server authentication to be enabled on the instance of SQL Server. To do this:

1. In **SQL Server Management Studio**, right-click the instance of SQL Server to configure; then select **Properties**.
2. Select the **Security** section on the left.
3. Change the **Server Authentication** to **SQL Server and Windows Authentication mode**.
4. Restart the Microsoft SQL Server service using either the standard service control panel or the SQL Server tools.

Create a database user

PaperCut NG requires a user to connect to the database. To create this user:

1. In **SQL Server Management Studio**, right-click **Security > Logins**; then select **New Login**.
2. Enter the username (e.g. papercut).
3. Change the **Server Authentication** to **SQL Server and Windows Authentication mode**.
4. Enter the user's password.
5. Disable password expiration.
6. Click **OK**.
7. After creating the PaperCut NG database, assign this user `db_owner` permissions on the database, so that it can create the required database tables.
8. Initialize the database.

Set statistics to auto update

1. In **SQL Server Management Studio**, right-click the database; then select **Properties**.

   The **Database Properties** dialog is displayed.
2. Scroll to the top of the **Other options** list.
3. In **Auto Update Statistics**, select **True**.
4. Click **OK**.

Step 5: Change the PaperCut NG connection details

The next step is to configure PaperCut NG to connect to the new external database:

1. On the Application Server, open the server config file in a text editor (e.g. Notepad):

   `[app-path]/server/server.properties`

2. Comment out the line:

   `database.type=Internal`

   by adding a # (hash) character to the beginning of the line.

3. Find the database connection details for the database type you require (for example, SQL Server), and uncomment the lines by removing the # (hash) characters.

4. Set the username and password to connect to the database:

   ```
   database.username=[your-db-user]
   database.password=[your-db-password]
   ```

5. Set the database URL, which describes the location and connection details of the external database.

   SQL Server database connection URL format

   The SQL Server URL format is:

   `jdbc:jtds:sqlserver://[server]/[database]`

   Where:

   - `[server]` is the name of the server running the SQL Server database, and must be resolvable from the PaperCut NG server. If the SQL Server instance is running on the same machine, then you can use `localhost`.

   - `[database]` is the name of the SQL Server database you created in Step 3 above.

   The default port is 1433. You can specify a different port in the URL if required.

   `jdbc:jtds:sqlserver://[server][:port]/[database]`

   When using SQL Server instances, the instance name is specified in the connection URL as follows:

   ```
   jdbc:jtds:sqlserver://[server]/[database];instance=
   [instancename]
   ```

Step 6: Initialize the new database

The next step is to initialize the new database, creating the required database tables and initial data. To initialize the database:

1. On the server, open a command prompt. (If you see 'Access Denied' errors, run the command prompt as an Administrator).

2. Change (`cd`) to the server binaries directory. e.g.

   `Windows: cd "C:\Program Files\PaperCut NG\server\bin\win"`

3. Run the following command: `db-tools init-db`.

A message is displayed to indicate that the connection details are correct and the database was initialized correctly.

Step 7: Load the data into the new database

This step loads the data (that was exported in Step 2) into the database. To import the data:

1. On the server, open a command prompt. (If you see 'Access Denied' errors, run the command prompt as an Administrator).

2. Change (`cd`) to the server binaries directory. e.g.

   ```
   Windows: cd "C:\Program Files\PaperCut NG\server\bin\win"
   ```

3. Run the following command: `db-tools import-db "backup file name"`.

   This command shows the data import progress.

If no errors occur, the application is ready to restart.

Step 8: Restart PaperCut NG

The data is now in the new database and you can restart the server.

For more information, see Stop and start the Application Server.

Wait 30 seconds for the server to start, then log in to the Admin web interface. If you can log in successfully, then the upsizing process worked successfully.

4. Configuring PaperCut NG

After you have finished the Configuration Wizard, you need to configure a few options within the Admin web interface.

- Add groups to the Group List
- Configure user details
- Create shared accounts
- Configure Secure Print Release
- Set print prices
- Set up print policies
- Allocate a quota to students
- Configure reports

This is all you need to do get your PaperCut NG system up and running. There are, however, many other options that you can configure to suit your needs.

4.1. Add groups to the Group List

When you import users into PaperCut NG from a user directory, the groups in that directory are also imported, however, they are not automatically displayed in the Group List. You need to add the required groups to the Group List.

1. Click the **Groups** tab.
2. In the **Actions** menu, click **Add/Remove groups**.
3. Select the group(s) required on the left-hand-side; then click the **Add** arrow (pointing to the right).
4. Click **Apply**.
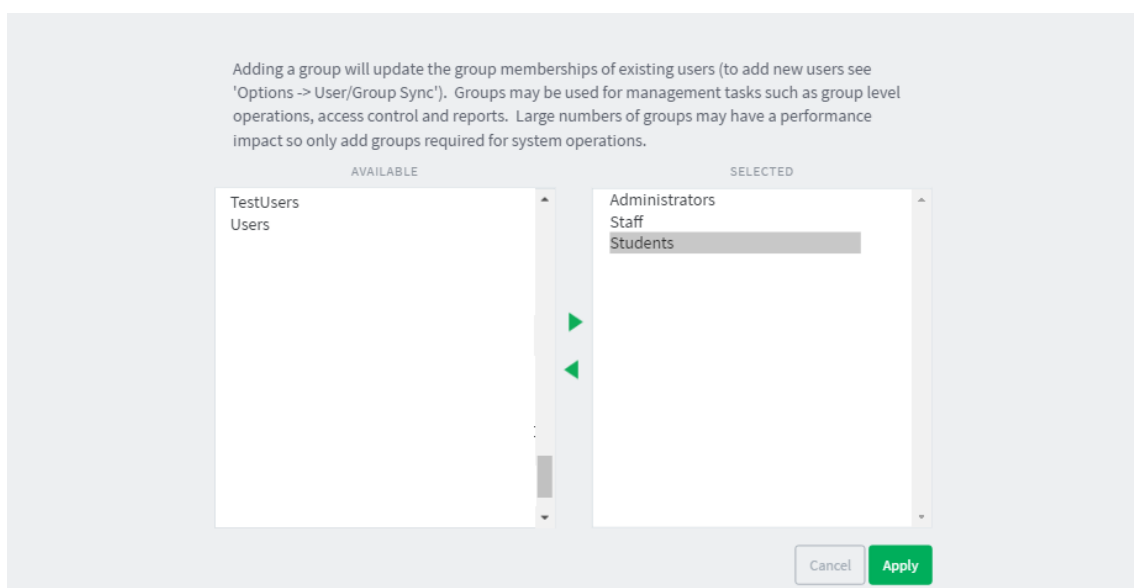
4.2. Configure user details

By default, the settings for all users are the same. However, you need different settings for your Staff and Student groups. The main differences are:

- Staff need unrestricted balances. Students need restricted balances, that is, once their balance reaches zero, they can no longer print.
- Staff need to be able to charge their jobs to shared accounts. Students' jobs should be charged to their personal account.
- Optionally, you can allocate students an opening balance or quota. Once this is used, students can be given the option to add credit to their accounts via a cash payment to an administrator, Prepaid/TopUp Cards, or a Payment Gateway.

If you want to change the default settings, you need to:

- change the setting for users that are already in PaperCut NG.
- change the default settings for any users that will be added to PaperCut NG in the future.

4.2.1. Configure student details

To modify the user details for the existing student group:

1. Click the **Groups** tab.

2. Select the Student group.

3. In the **Actions** menu, select **Other bulk user actions**.

4. (Optional) If you want to allocate an opening credit balance for students, in the **Edit credit balance** area, select **Adjust credit by**; then enter the credit amount.

   > **Note:**
   > You might have already done this during the installation process.

5. In the **Change settings** area, in **Change account selection setting**, select **Charge to personal account with popup confirmation**.

   > **Note:**
   > This setting requires users to run the User Client software at all times.

6. To avoid blocking students from printing until you are ready to "Go Live", temporarily adjust the charge to 0%. If you set a print cost before students can add credit to their account, they will be unable to print as they are restricted users (cannot print when balance is zero). As part of the "Go Live" tasks, you will change this back to 100%.

   a. Select the **Change advanced user settings** check box.

   b. Select the **Override printer settings** check box.

   c. Select the **Multiply job costs by** check box; then enter **0%**. As part of the "Go Live"

tasks, you will change this back to 100%.

7. Click **OK**.

To modify the new user creation rules for the student group:

1. Click the **Groups** tab.

2. Select group.

3. In the **New User Settings area**, select the **Use this group to define new user settings** check box.

4. In **Initial Account Selection Settings**, select the **Charge to personal account with popup confirmation** check box.

5. (Optional) If you want to allocate an opening credit balance for students, in **Initial Credit**, enter the credit amount.

6. Click **OK**.

(Optional) To allocate a monthly quota to the Student group:

1. Click the **Groups** tab.

2. Select the Student group.

3. In the **Quota Scheduling** area, complete the following fields:

   - **Period**—select a time period

   - **Schedule amount**—enter the amount to be credited to student accounts.

4. If you do not want users to be able to "bank up" their quota allowance, select the **Only allow accumulation up to** check box; then enter a maximum amount that can be accumulated. Allowing accumulation can lead to excessive use at certain periods of the year, such as the end of semester

5. Click **OK**.

4.2.2. Configure staff settings

To change the user settings for the existing staff group members

1. Click the **Groups** tab.

2. Select the Staff group.

3. In the **Actions** menu, select **Other bulk user actions**.

4. In the **Change settings** area, change the following settings:

- **Change restriction**—select **Unrestricted**.
- **Change account selection setting**— select **Show the standard account selection popup**.
- **Allow user to charge to their personal account**—clear this check box.
- **Allow user to select shared accounts (using PIN/code)**—clear this check box.

5. Click **OK**.

To modify the new user creation settings for the Staff group

1. Click the **Groups** tab.

2. Select the staff group.

3. In the **New User Settings** area, select the **Use this group to define new user settings** check box.

4. Clear the **Initially Restricted** check box.

5. In **Initial Account Selection Settings**, select **Show the standard account selection popup**.

6. In **Information to show in popup**, clear the following check boxes:

   - **Allow user to charge to their personal account**
   - **Allow user to select shared accounts (using PIN/code)**

7. Click **OK**.

4.3. Create shared accounts

PaperCut NG has two types of accounts: personal accounts and shared accounts. Personal accounts are automatically created when users are imported into the system. Shared accounts can be created manually in the Admin web interface on an as-needed basis, or, if you have a large number of accounts, you can automate the account creation process. You should have a list of shared accounts that you created in the preparation stage of your implementation (see Identify department / subject shared accounts).

Some uses of shared accounts include:

- Budget staff use via shared faculty or department accounts (eg. Science)
- Provide shared accounts for classes or subjects (eg. Biology)
- Track printing costs by subject areas

4.3.1. Add staff shared accounts

1. Select **Accounts > Batch Import / Update**.

2. Add the accounts in one of the following ways:

   - **Import a tab delimited file:**
     a. Click **Choose file**; then select the file you prepared before the installation.
     b. Click **Import**.

- **Manually add accounts:**

    a. In the **Actions** menu, click **Create a new account**.

    b. Add the account details; then click **OK**.

3. Click the **Accounts** tab to see a neatly created tiered structure of accounts.

If your accounts have a tiered structure, such as the example provided above, you can prevent users from charging to the parent code ensuring a child code is selected.

1. Click the **Accounts** tab.

2. In the **Actions** menu, click **Bulk account actions**.

3. In the **Account Selection** area, select **Parent accounts** from the drop-down list.

4. In the **Change security settings** area, select the **Remove security group** check box; then select the **[All Users]** group.

5. Click **OK**.

    The **Shared Account List** page is displayed.

4.3.2. Grant access to shared accounts to staff

By default, no users are automatically granted access to accounts; you must manually allow access to accounts. You also need to update the new account creation rules so that the Staff group are automatically granted access to any future accounts.

To grant access to existing accounts:

1. Click the **Accounts** tab.

2. In the **Actions** menu, click **Bulk account actions**.

3. In the **Change security settings** area, select the **Add security group** check box; then select **Staff**.

4. Click **OK**.

To grant access to any new accounts created in the future:

1. Click the **Accounts** tab.

2. Select **the Template** account.

3. Click the **Security** tab.

4. In the **Groups** area, select the **Staff** group; then click **Add**.
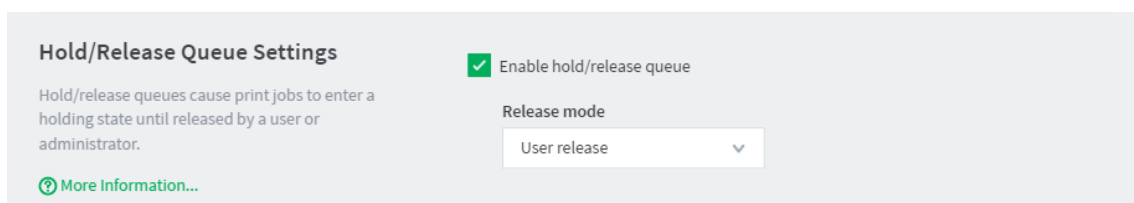
4.4. Configure Secure Print Release

To configure your PaperCut NG installation for Secure Print Release, you need to:

- Enable Secure Print Release
- Configure Find-Me printing (optional)
- Set up a Release Station

4.4.1. Enable Secure Print Release

By default, print jobs are sent directly to the printer and are not held. To enable Secure Print Release on a printer:

1. Click the **Printers** tab.

2. Select a printer.

3. In the **Hold/Release Queue Settings** area, select the **Enable hold/release queue** check box. This ensures that jobs are held in the print queue until users are ready to release their jobs.

> **Hold/Release Queue Settings**
>
> Hold/release queues cause print jobs to enter a holding state until released by a user or administrator.
>
> ☑ Enable hold/release queue
>
> **Release mode**
>
> User release   ⌄
>
> ⑦ More Information...

4. In **Release mode**, select **User release** (the default). This ensures that jobs are held in the virtual queue and not automatically forwarded to one of the target printers.

5. Click **OK**.

> ⭐ **Tip:**
> To configure multiple printers with hold/release queue support, use the **Copy settings to other printers** function. To use this, configure one printer as required, click **Copy**

> ⭐ **settings to other printers**; then select the printers to copy the settings to.

4.4.2. Configure Find-Me printing

Find-Me printing allows users to "pull" a print job to a printer Users simply print to a single global virtual queue, then go to a Release Station and release their print job(s) at the physical printer. This greatly enhances their experience, as they don't have to search through a long list of printers at the time of printing, with the hope that they selected the right one.

To set up Find-Me printing:

1. Create a new print queue on the print server called Find-Me. You will configure this printer as a single global virtual queue that users will print to. It is called virtual as this print queue does not point to a physical printer.

   > ✏️ **Note:**
   > Some printer drivers require the queue to point to the IP address of a printer. If your printer requires this, it does not matter which printer you point to as PaperCut NG does not use this information. Consider using PaperCut's Global Print Driver, which can be found here:
   >
   > ```
   > [app-path]\PaperCut
   > NG\providers\print\drivers\global\win\PC-Global-Print-
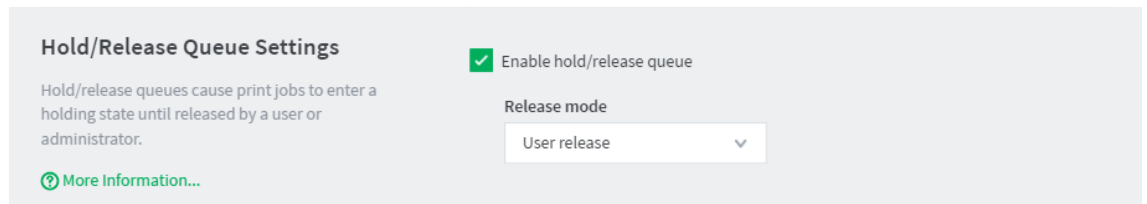   > Driver
   > ```

2. Point the virtual queue to a nul port, more help is available here.

   > ▶️ **Important:**
   > This step is very important because if you point the virtual queue to a physical device and PaperCut NG is stopped, all print jobs in the virtual queue will automatically be printed on the physical printer.

3. In the Admin web interface, select the printer called Find-Me:

   a. Click the **Printers** tab.

   b. Select the Find-Me queue.

   c. In the **Configuration** area, in **Queue type**, select **This is a virtual queue (jobs will be forwarded to a different queue)**.

   The **Job Redirection Settings** area is displayed.

   d. In the **Job Redirection Settings** area, in **Jobs may be redirected to these destination queues**, select all the target print queues this Find Me queue can redirect to.

   e. In the **Hold/Release Queue Settings** area, select the **Enable hold/release queue** check box. This ensures that jobs are held in the print queue until users are ready to release their jobs.

Hold/Release Queue Settings

Hold/release queues cause print jobs to enter a
holding state until released by a user or
administrator.

☑ Enable hold/release queue

Release mode

User release   ⌄

⊘ More Information...

f. In **Release mode**, select **User release** (the default). This ensures that jobs are held in
    the virtual queue and not automatically forwarded to one of the target printers.

g. Click **OK**.

> **Note:**
> Before you can test your Find Me queue, you need to set up a Release Station.

4.4.3. Set up a Release Station

Release Stations allow users to release a print job that is held in a queue. PaperCut NG offers a
number of different Release Station interfaces.If you are using Secure Print Release or Find-Me
printing, you need to set up one of the following Release Station interfaces:

- **Standard Release Station**
- **Mobile interface**
- **Fast Release terminal** (contact your local Authorized Solution Center (ASC))

For more options and information, see Release Station interfaces.

Set up a Standard Release Station

> **Tip:**
> We recommend a zero-deployment installation of the Release Station, so it is
> automatically upgraded when the application is upgraded. We do support local installation
> of Release Stations, but this topic assumes a zero-deployment installation.

Step 1: Set up a Windows workstation near the printer

The Release Station terminal (you can use any machine) should be located close to the printer so
users can release the jobs and pick up the printing nearby. The Release Station terminal should
meet the following requirements:

- Windows 7 Home or Professional (or later)
- 1GB Ram (32-bit) or 2GB ram (64-bit)
- Attached to the network so that it can communicate with the Application Server.

Step 2: Set the workstation to automatically log in (optional)

If you want the Release Station to automatically start when the terminal is rebooted, you need to set
the workstation to automatically log in.

1. Create an account for the Release Station to log in with. The account should be a normal local or domain user and not have any administration privileges.

2. Set up automatic log in on Windows. For more information, see https://support.microsoft.com/en-us/kb/324737.

Step 3: Set up the Release Station to run on startup

To set the Release Station software to run on startup:

1. Create a new shortcut icon in the user's Startup folder.

   ```
   %APPDATA%\Roaming\Microsoft\Windows\Start
   Menu\Programs\Startup
   ```

   The **Create Shortcut** screen is displayed.

2. In **Type the location of the item**, enter `\\[servername]\PCRelease\pc-release-local-cache.exe`.

   where `[servername]` is the name of the server hosting the Application Server.

3. Log out and log back in again.

You can also run the Release Station by copying the files from the server hosting the Application Server to the dedicated workstation. These files are located under `[app-dir]/release`.

This runs the Release Station in default mode with default configuration options. You can change the default configuration by modifying the following file:

```
[appdir]\release\config.properties
```

This configuration file has many options that allow you to customize the Release Station behavior and look. The options are documented in the configuration file. In addition to the look, you can also configure behaviour, such as limiting the list of destination printers the Release Station can release to.

If you are running multiple Release Stations, you can provide a custom configuration for each Release Station. Create a machine specific configuration file in the `[appdir]\release` directory named:

```
config.[machine-name].properties
```

where `[machine-name]` is the name of the Windows machine running the Release Station. Any settings in this file override settings in the global `config.properties` file.

Step 4: Lock down the Release Station machine

You should lock down the Release Station terminal to stop users from performing administrative operations, such as changing the user's password. You can disable settings using group policy:

1. Open the **Local Group Policy Editor**:
   a. Click **Start**.
   b. Enter **Run**.

   c. Type **gpedit.msc**.

   d. Click **OK**.

2. Navigate to **User Configuration > Administrative Templates > System > Ctl+Alt+Del Options**.

3. Disable the following settings:

- **Remove Task Manager**
- **Remove Lock Computer**
- **Remove Change Password**
- **Remove Logoff**

To disable a setting:

   a. Double-click the option.

   b. Select **Disabled**.

   c. Click **OK**.

Depending on the level of security required, administrators can lock down many other Windows features and options using group policy.

Set up a Mobile Release Station

Mobile Print Release offers Secure Print Release on any type of printer from a mobile device. You can access the mobile print release station after connecting to your network's local WiFi and opening the phone's Internet browser. Browse to one of the following URLs:

- `https://[servername]:9192/mr`
- `http://[servername]:9191/mr`

HTTPS is recommended, as users authenticate themselves via this connection. By default, PaperCut NG is installed with a self-signed certificate and raises warnings in secure browsers. Consider installing an SSL certificate (see Generate an SSL/HTTPS key , or use the HTTP URL). We would recommend HTTP only as a secondary option, and only on a secured WiFi connection.

> **Tip:**
> You can also deploy Mobile Print Release to iOS devices as an App. The user needs to access `https://[servername]:9192/mr/install`. This installs a web profile that automatically creates the home screen icon, which you might prefer to manual bookmarking on some sites.

4.5. Set print prices

During the preparation stage, you determined your print cost model. Now it is time to enter that cost model into PaperCut NG.

1. Click the **Printers** tab.

| Printer List | Jobs Pending Release | Notification Options | Charts | Refunds |

Q Quick Find   ✕

Filter off ✎

PRINTER ▲	PAGE COST	ATTRIBS.	TOTAL PAGES	TOTAL JOBS
🖨 [Template printer]	$0.00 (standard)	No filters	0	0

Export/Print 📄 📊 📋

2. Click the **[Template printer]** link.

3. Click the **Charging** tab.

4. Enter the desired 'per page' pricing information.

   a. If you want to charge a single flat rate per page, in the **Charging type** drop-down list, select **Simple** then enter the per page rate.

Charging type: standard ⌄

Standard Charging

Standard charging allows setting costs for each combination of paper size, color / grayscale and single / double sided (duplex).

SIZE	COLOR	GRAYSCALE	COLOR DUPLEX (EACH SIDE)	GRAYSCALE DUPLEX (EACH SIDE)
LETTER (ANSI_A) 🗑	$0.80	$0.30	$0.70	$0.25
LEGAL (LEGAL-14) 🗑	$0.85	$0.35	$0.75	$0.30
11X17 (Ledger) 🗑	$1.50	$0.65	$1.30	$0.60
Default (other sizes)	$0.80	$0.30	$0.70	$0.25

Add size: A4 (ISO_A4) ⌄ **Add**

Cancel   **Apply**

   b. If you have more detailed pricing, in the **Charging type** drop-down list, select **Standard** then enter your charge rates.

5. Click **Apply**.

When you set the pricing on the **[Template printer]**, any new printers installed and displayed in PaperCut NG will use these prices. However, these prices will not automatically apply to any printers already in the system. To apply the cost model to existing printers:

1. In the **Actions** menu, select **Copy settings to other printers**.

2. In the **Target** area, select the check box next to each printer you want to apply the cost model, or click **Select All**.

3. In the **Settings** area, select the **Cost settings** check box.

4. Click **Copy**.

If PaperCut NG hasn't imported the printers from this server, restart the PaperCut NG Print Provider service.

> **Important:**
> You have now set up a cost structure, however, since you applied a zero cost to the Student group, they will not be charged until you go live.

4.6. Set up print policies

PaperCut's advanced scripting interface is a powerful and flexible feature that you can use to define and fine tune your printing policies.

Some common uses include:

- Converting all color print jobs to grayscale..
- Displaying a popup message if a user forgets to select duplex on large jobs.
- Showing a dialog that displays environmental impact statistics about a user's print job, such as the amount of carbon dioxide equivalent greenhouse gases produced.
- Prompting the user to confirm large jobs before printing.
- Giving discounts during off-peak times.
- Charging printing to departments during class-time.
- Displaying warning messages under selected conditions.
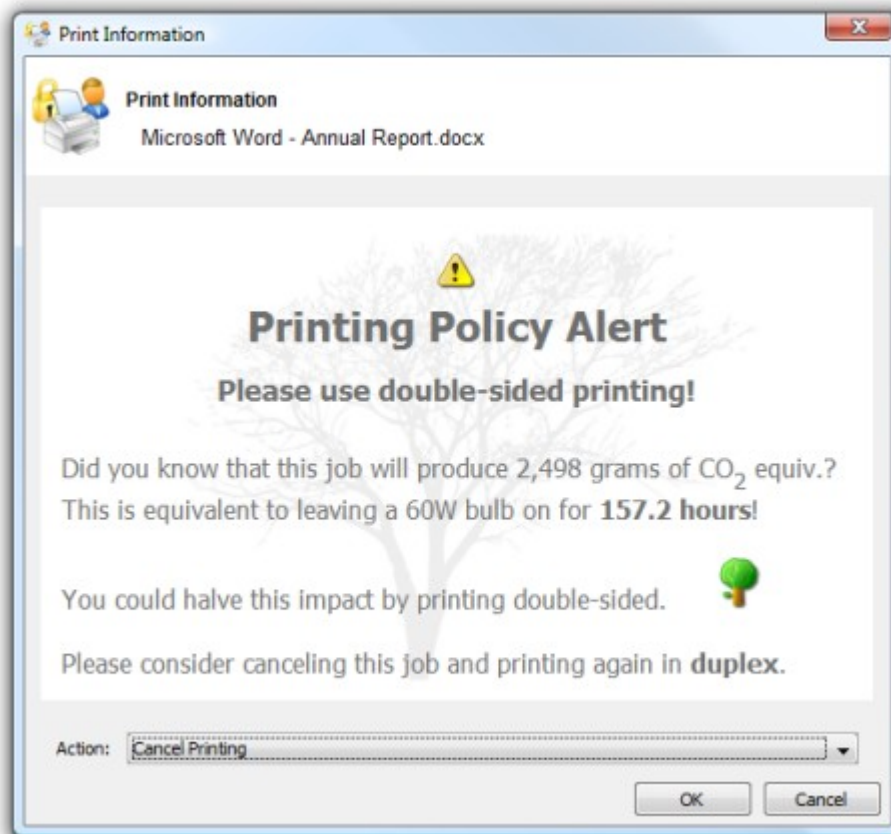
Create a print script

Print scripts are segments of code that are run whenever a new print job arrives in the queue. The script is defined using the concept of a "hook". A hook is a JavaScript function (e.g. `function printJobHook(inputs, actions) { }`) that is called for each new job. Your print script defines this method, its behavior, and its actions.

All scripts are defined on a per printer basis allowing each printer to have its own logic (although you can share/copy a common script between printers).

To create a print script:

1. Click the **Printers** tab.

2. Select a printer.

3. Click the **Scripting** tab.

4. Select the **Enable print script** checkbox.

5. Create your script in one of the following ways:

   - import a predefined recipe (script)

   - write your own script using snippets

6. Click **Apply**.

> ⭐ **Tip:**
> One good way to experiment with print scripting is to apply your script initially on a test

printer (or fake print queue, such as a print queue pointing to an unused LPT port). This allows you to test and experiment, and when the logic is right, copy/deploy across to other live printers.

Recipes

Recipes demonstrate best practice and should be considered as a starting point for development of your own scripts.

In education implementations, there are often no print restrictions placed on students, as they are paying for their own printing. However, it is good practice to encourage staff to print in monochrome and duplex (double-sided).

To help reduce printing costs and save the environment, it is good practice to encourage staff to print in monochrome and duplex (double-sided).

To help reduce printing costs and save the environment, it is good practice to encourage staff to print in monochrome and duplex (double-sided) for all office account codes.

To use a recipe:

1. Click **Import Recipe**.

   A list of the predefined recipes is displayed. For example, the **Print Policy Enforcement (warnings & automatic conversion)** recipe:

   - discourages single-sided printing
   - discourages printing of emails in color
   - discourages printing of web pages in color
   - discourages printing of emails that have more than one page

2. Click **Import** next to the recipe you want to use.

   A confirmation prompt is displayed.

3. Click **OK**.

   The recipe replaces what is currently in your script.

4. If required, you can modify the script to suit your needs.

5. Click **Apply**.

Snippets

Code *snippets* are small code fragments that demonstrate how to use the scripting API (inputs, functions, and methods). Consider using snippets as a base for adding functionality to your script.

To use a snippet:

1. Place your cursor in the position you want to insert the snippet.

2. Click **Insert Snippet at Cursor**.

   A list of code snippets is displayed. For example, the **Test if job is color** snippet provides the code to check if a print job is being printed in color. This could be used as part of a script to perform an action on all color print jobs.

Snippets

Click insert to insert a code snippet at the cursor position.

Common

Print job hook stub (starting point)

<div style="text-align:right">insert</div>

Check that job analysis is complete

<div style="text-align:right">insert</div>

Tests

Test number of pages

<div style="text-align:right">insert</div>

Test if job is color

<div style="text-align:right">insert</div>

Test if job is duplex

<div style="text-align:right">insert</div>

Test job cost

<div style="text-align:right">insert</div>

Test job time (hour)

<div style="text-align:right">insert</div>

Test job time (day)

<div style="text-align:right">insert</div>

Test user group

<div style="text-align:right">insert</div>

Test printer group

<div style="text-align:right">insert</div>

3. Click **insert** next to the snippet you want to use.

   A confirmation prompt is displayed.

4. Click **OK**.

   The snippet is added to your script.

5. If required, you can modify the code to suit your needs.

6. Click **Apply**.

4.7. Allocate a quota to students

Many educational organizations allocate students a quota, or credit, that they can use for their printing. Once a student has used all of their quota, they must pay for any additional costs themselves. You can allocate:

- an initial one off quota
- regular quota

Allocate an initial quota

To provide an initial one off credit to students:

1. Click the **Groups** tab.
2. Select the Student group.
3. In the **Quota Scheduling** area, complete the following fields:
   - **Period**—select **Custom**
   - **Custom Schedule Period(s)**—enter the date on which you want to allocate the initial credit in the format YYYY-MM-DD.

4. Click **OK**.

Allocate a regular quota

To allocate $5.00 a month to members of the Student group:

1. Click the **Groups** tab.
2. Select the Student group.
3. In the **Quota Scheduling** area, complete the following fields:
   - **Period**—select **Monthly**
   - **Schedule amount**—enter **5.00**.

4. If you do not want users to be able to "bank up" their quota allowance, select the **Only allow accumulation up to** check box; then enter a maximum amount that can be accumulated. Allowing accumulation can lead to excessive use at certain periods of the year, such as the end of semester.

5. Click **OK**.

4.8. Configure reports

PaperCut NG offers a wide range of reports that can be manually generated or scheduled and automatically emailed.

PaperCut NG reports on the print usage of your organization. We recommend the following reports as a starting point:

- **Group printing - summary**—the total charges against each user group for a given period.
- **Group printing - user summary**—the total charges against each user within each user group for a given period.
- **Shared account printing - summary**—the total charges against the shared account for a given period.
- **Shared account printing-logs**—each print job charged against each shared account for a given period.
- **User printing - summary**—the print usage by individuals and can help encourage better printing practices.
- **Printer usage - summary**—the total number of pages printed, number of jobs, and job costs per printer. This information can help you determine if your printers are being used equally, that is, you have the right printers in the right locations.
- **Unreleased jobs paper saving - summary**—the number of pages that were sent to a printer, but were not released for print. This report shows you the cost savings you have achieved through using Secure Print Release because without Secure Print Release, these pages would have been printed.

4.8.1. Schedule reports

> **Important:**
> Before scheduled reports can be sent via email, you need to configure the SMTP server

(outgoing email server). For information about how to configure email notifications, see Configuring email notifications.

1. Select **Reports > Schedule /Email Reports**.

Schedule a Report

Reports can be scheduled for automatic delivery via email or can be saved to disk.

To schedule a report, fill in the details to the right and press 'Add'.

More Information...

Type	Shared account printing - summary

Title

Shared account printing - summary

An optional title to appear at the top of the report

Optional parameters

Shared account name :

Limit to a shared account (or multiple comma-separated shared accounts). Leave blank to include all accounts. E.g.: 'parent\child'.

Full shared account code :

Limit to a shared account with this code. Leave blank to include all accounts. E.g.: 'parentCode-childCode'

Parent account name :

Limit to one parent account and its sub-accounts. Leave blank to include all accounts.

Parent account code :

Limit to one parent account and its sub-accounts by the code of the parent account. Leave blank to include all accounts.

Invoiced :

Choose whether to show only invoiced jobs or not.

User group name :

Limit to one group. Leave blank to include all groups.

Single server name :

Limit to one print server.

Single printer name :

Limit to one printer.

Printers : All printers

Limit to selected printers.

Printer/Device group :

Limit to one printer/device group. Leave blank to include all printers and devices.

Show report parameters : ☑

Enable this option to print report parameters on the report header.

Format PDF

Report Daily

The next report will run on Jan 11, 2017. Click on more information to view the advanced reporting options.

Delivery By Email

Recipients

A comma separated list of email addresses, e.g.: joe@domain.org,bill@domain.org

Add

2. Select the desired report options.

3. Click **Add**.

4.9. Configure the User web interface

You can easily tailor the User web interface to fit your requirements. PaperCut NG provides configuration options to conveniently "hide" or disable selected features. Take the time now to enable and disable features applicable to your implementation. For example, if your organization does not intend to use TopUp/Pre-Paid cards, you can remove the card link from the User web interface. Additional details, including an explanation of the options, are detailed in Customizing the User web interface.

If you have HTML experience, you can tailor the "look-and-feel" of the User web interface. Suggestions include:

- Coordinating the page design with an existing "Intranet" site

- Adding text on key pages to explain the organization's IT policies and procedures

- Additional instruction text to assist users with managing their account

Tip:
Much of the functionality in PaperCut NG has come from suggestions from organizations running PaperCut NG. If you have an idea, let the PaperCut Software development team know so they can evaluate it for inclusion in a future release.

5. Testing the implementation
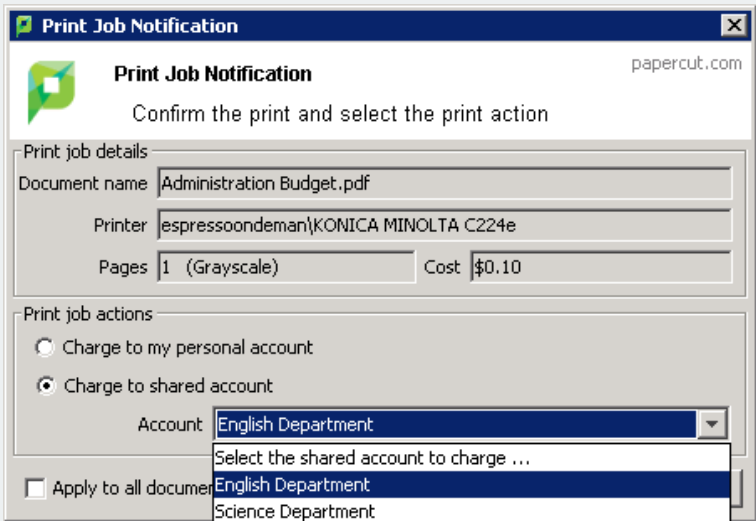
Testing is an important step with any software deployment project. Use the following test plan to verify that the setup and charging rules work as expected, and that print jobs are charged appropriately.

You should perform the following tests on both a Staff user account and a Student user account.

5.1. User Client tests

OBJECTIVE: To verify that the User Client automatically opens on login, and displays all of the available shared accounts.

METHOD: Log in to a network workstation under a user account and check that the User Client is available. Print a document for a selected shared account and verify that the account has been charged.

Test	Test Criteria	Passed?
User Client automatically opens on start up	1. On a networked workstation, restart the machine; then check that the PaperCut NG icon is displayed in the system tray. 	☐
Print policies are being applied	1. If you created the **Color print jobs require user confirmation** script, send a test color print job and check that a confirmation popup is displayed asking you if you want to print in grayscale. If you set up any other print policies, confirm that they are being applied.	☐
Access to shared accounts (Staff account only)	1. Send a test print job to any printer. The **Print Job Notification** screen is displayed. This screen allows you to select a customer/account/matter code. 2. Provide access for the test user to all shared accounts. Verify that the appropriate accounts are available and the speed at which the account	☐

Test	Test Criteria	Passed?
	list is displayed is acceptable. If you are managing large client billing databases, consider using the methods outlined in the Knowledge Base article Large shared account deployments.	

5.2. Printer related tests

OBJECTIVE: To verify printers are correctly configured and supported by PaperCut NG, and charging works as expected.

METHOD:

1. Log in to a network workstation under a standard user account and print a test document for each test case.

2. In the PaperCut NG Admin web interface, select **Logs > Job Log**. The Job Log displays the details of all print jobs from all users.

3. Check that the page count and cost calculations are correct.

4. Click **Application Log**.

5. Check that there are no errors displayed in the Application Log.

Repeat this test cycle for all printers (or printer types if there are many printers).

Test	Passed?
Print a single page document.	☐
Print a multi-page document	☐
Print a color document with images	☐
If Advanced Charging options are used, test other attributes, such as Grayscale and/or Duplex discount.	☐

5.3. Accounting related tests

OBJECTIVE: To verify that all print jobs are being calculated correctly, recorded against the right printer, charged to the right user, and their account balances are being adjusted accordingly.

METHOD:

1. Log in to a network workstation under a user account and print multiple test documents with different page counts for each test case.

2. In the PaperCut NG Admin web interface, select **Logs > Job Log**. The Job Log displays the details of all print jobs from all users.

3. Check that the page count and cost calculations are correct.

4. Click **Application Log**.

5. Check that there are no errors displayed in the Application Log.

6. Repeat the test cycle for all printers (or printer types if many printers).

Test	Test Criteria	Passed?
User accounting	Verify that all printed test documents are listed under the correct user account and that the page count and account balance associated with the user's account have changed accordingly.	☐
Printer accounting	Verify that all printed test documents have increased the printer's page count counter.	☐

5.4. Operational tests

OBJECTIVE: To verify user management and related tasks work as expected.

METHOD: Perform common user management tasks and verify the operations work and log as expected. Perform each of the following tests in the standard PaperCut NG Admin web interface; then repeat the relevant tests in the User web interface.

Test	Test criteria	Passed?
User Creation	Check that user accounts are automatically created from domain users. 1. Delete the test user selected during installation. a. Select **Users**. b. Select the test user. c. In the **Actions** menu, click **Delete user**. 2. Synchronize with the domain user directory. a. Select **Options > User/Group Sync**. b. Click **Synchonize now**. 3. Check that the test user is listed on the **User List** page.	☐
Remote Access	Open the following URL from a remote system logging in using a standard web browser: `http://[server]:9191/admin`	☐
Access to Shared Accounts (Staff account only)	Check that all users and groups have access to the correct shared accounts and the **[Staff]** group has access to the **[Template account]**. 1. Click the **Accounts** tab. 2. Select an account. 3. Click **Security**.	☐
Auto Scheduling	If you have set up quota allocations for students: 1. Select **Groups**. 2. Select the **Student** group. 3. In the **Quota Scheduling** area, set up rules to allocate credit on a regular basis. For example, place a $1.00 daily allocation on the **[All users]** group. 4. After 24 hours, verify that the credit was allocated properly to the users' accounts (**User Details** page).	☐

Test	Test criteria	Passed?
	5. Check that the event was recorded in the users **Transaction History** and the **App Log**.	
Set User's Credit (Student account only)	Add an amount to a Student's account. 1. Click **Users**. 2. Select your test Student user. 3. In the **Account Details** area, in **Balance**, enter an amount to credit the account. 4. Click **OK**. 5. Select your test Student user. 6. Click **Transaction History**. 7. Verify the amount is applied and a transaction was recorded against the user's account.	☐
User Transfer (Student account only)	Perform this test if your organization plans on allowing students to transfer funds to other users. 1. Log on as a test user and open the browser to the URL: http://[server]:9191/user. 2. Select **Transfer**. 3. Transfer funds to another account. 4. Verify the transfer is logged as a transaction in both users' **Transaction History**.	☐
TopUp Cards (Student account only)	Perform this test if your organization plans to use TopUp/Pre-Paid cards. 1. Follow the instructions in the PaperCut NG User Manual to create a test batch of 10 cards. 2. Import the TopUp card numbers (the *.tnd file) into the system. 3. Log on as a test Student user, enter the card number, and verify the equivalent value was applied.	☐

5.5. Other testing

Run PaperCut NG for testing purposes for a period of one week. Regularly inspect PaperCut NG **Logs > Application Log** for error messages or reported problems. You can do this testing phase while preparing for rollout. Take the opportunity to familiarize yourself with the application.

Filter on ✏️ 🚫

DATE ↓	CHARGED TO	PRINTER	PAGES	COST	DOCUMENT NAME	ATTRIBS.	STATUS
Jan 28, 2017 3:46:01 PM	abel.stenback	server1\Physics Print Room 1	1	$0.25	Venn	A4 (ISO_A4) Duplex: No ...	🖨 Printed refund edit
Jan 28, 2017 3:41:13 PM	abel.stenback	server1\Physics Print Room 1	1	$0.25	WET PAINT	A4 (ISO_A4) Duplex: No ...	🖨 Printed refund edit
Jan 28, 2017 3:17:58 PM	abel.stenback	server1\Physics Print Room 1	1	$0.25	Periodic Table	A4 (ISO_A4) Duplex: No ...	🖨 Printed refund edit
Jan 25, 2017 12:42:16 PM	abel.stenback	server1\Medicine Library 1	1	$0.25	All glory to teapot	LETTER (ANSI_A) Duplex: No ...	🖨 Printed refund edit

Export/Print 📄 📊 📋

▼ Report based on above data

Figure 1: Verify that transactions are being tracked accurately

6. Rolling out PaperCut NG

PaperCut NG is now installed and tested and most of the technical work is complete. You should also address policy related issues, user training, and end user experience before going live. After you have gone live, you should plan for some regular daily, weekly, and monthly tasks.

6.1. Prepare for rollout

Policy Change

Most organizations have a formal "acceptable use policy" or a general "IT usage policy" covering the use of IT equipment. Smaller organization might have a "usage policy" that's informally conveyed by management. In a quota environment, it is important to formalize the policy of when the quota is allocated and how users are expected to use it. Consider modifying existing policies or documentation. In many cases a simple email or notice on the Intranet site is enough.

Staff Training

Most organizations delegate the day-to-day user management tasks to selected staff. Day-to-day user management includes:

- Keeping a general eye on activity and use
- Manually taking money and adding credit to user accounts
- Handling refunds or requests for additional quota

PaperCut NG provides a web browser based management interface designed for non-technical users. Even though the PaperCut NG Admin web interface is simple and intuitive, make sure you dedicate some time to run through standard operations with the selected non-technical staff and explain how these relate to policy and operation.

After training a staff member, grant them access to the Admin web interface. This step requires you to add the user's name to the list of approved administrators. The process is covered in detail in Assigning Administrator level Access.

End-User Training

End-user training revolves more around explaining policy changes and general awareness of the system. From an operations perspective, PaperCut NG has minimal impact on end users. In most cases, users continue to use the network as they always have. Consider the following points when addressing end user training:

For Silent/Active Monitoring:

- Consider informing users that monitoring is taking place. Typically, organizations that announce such a policy change see a 10% to 20% reduction in printing use as users become aware that irresponsible use is being monitored.
- Modify "IT use policy" to ensure users are aware that all activity is monitored

For a Quota System:

- Explain why the quota system is being implemented.

- Detail when the system will come into effect

- List how much credit will be provided to users

- Explain what the allowance covers and how they can use it

- Provide instructions on what happens when users run out of credit, for example, how to purchase a TopUp Card (voucher), or who to contact to apply for more quota.

- Instruct users on how they can monitor their account status and usage in the user web tools interface

  `https://[servername]:9192/user`

  `http://[servername]:9191/user`

- Provide a general explanation of any changes to the "IT usage policy"

For Up-front Payment Systems

- Explain why charging is being implemented

- Detail when the system will come into effect

- List how the user can add credit to their account

- Instruct users on how they can monitor their account status and usage via the User web interface:

  `https://[servername]:9192/user`

  `http://[servername]:9191/user`

- Provide a general explanation of any changes to the "IT use policy"

Example User Information Sheets that you can use as a starting point for your own information sheets or Intranet pages.

6.2. Go live

Installation and testing is now complete. Administration staff are trained in user account management, and all users have been informed of the policy changes.

Immediately before you go live, you should perform the following tasks:

- Change the cost multiplier for the **Students** group to 100%. Remember, you changed it to zero during implementation.

  1. Click the **Groups** tab.

  2. Select the Student group.

  3. In the **Actions** menu, select **Other bulk user actions**.

  4. In the **Change Settings** area:

     a. Select the **Change advanced user settings** check box.

     b. Select the **Override printer settings** check box.

c. Select the **Multiply job costs by** check box; then enter **100%**.

5. Click **OK**.

- Deploy the Find-Me print queue to all desktops. It is better to leave this until the last step so users do not inadvertently select the queue before you have fully configured the system.

6.3. Suggested tasks

PaperCut NG is now controlling and monitoring your printing environment. Like other important applications and network infrastructure, technical staff should allocate time to check system health, perform maintenance, and undertake regular backups. PaperCut NG is designed as a "self-managing" system, however, regular backup and inspection is recommended. You can use the PaperCut NG System Health Interface in conjunction with a monitoring tool, such as Zabbix, to monitor the system health and performance.

Suggested Daily Tasks

Undertake a full backup of all files located under:

```
Windows: C:\Program Files\PaperCut NG
```

Use automated backup software. This ensures all PaperCut NG data files can be restored in the event of system failure or other unforeseen problems.

> **Important:**
> PaperCut NG includes a weekly backup option; however, this is designed to complement rather than replace a good off-disk package strategy.

Suggested Weekly Tasks

- Inspect the PaperCut NG Application Log (**Logs > Application Log**) for any important messages or error events. You can also configure the system to automatically email nominated SysAdmins when errors occur.
- Inspect activity logs to ensure PaperCut NG is recording all activity.

Suggested Monthly Tasks

- Check the PaperCut Software website for updates.
- Review your backup procedure.
- Review resource costs against any changes in the cost of toner, paper, and maintenance. Ensure that end users are properly informed if you change the prices.

Appendix

In this section:

- Sizing guide
- Account import formats

Appendix 1: Sizing guide

The table below shows guidelines for the server specifications that are required to support PaperCut NG in order to give consistent performance. Users refers to the number of active users per day. These guidelines apply both to physical hardware and to virtual servers / virtual machines hosted locally or remotely.

When deploying PaperCut NG it is recommended that virtual servers are used where possible for easy scaling and quick backup / restore.

Always evaluate your host solution before deploying in order to make an informed decision regarding CPU load and memory usage.

PaperCut Authorized Solution Centers are able to offer architecture and infrastructure advice for large deployments.

Printers vs Users	Number of printers					
	5	20	100	1,000	5,000	10,000
1,000 users	1 CPU 2GB RAM	2 CPU 4GB RAM				
5,000 users	2 CPU 4GB RAM	2 CPU 4GB RAM	2 CPU 4GB RAM			
10,000 users	3 CPU 4GB RAM	3 CPU 4GB RAM **+RDBMS**	3 CPU 4GB RAM **+RDBMS**	3 CPU 8GB RAM **+RDBMS**		
20,000 users	4 CPU 6GB RAM	4 CPU 6GB RAM **+RDBMS**	4 CPU 6GB RAM **+RDBMS**	4 CPU 8GB RAM **+RDBMS**	4 CPU 8GB RAM **+RDBMS**	
60,000 users		4 CPU 6GB RAM **+RDBMS**	4 CPU 6GB RAM **+RDBMS**	8 CPU 12GB RAM **+RDBMS**	8 CPU 16GB RAM **+RDBMS**	10 CPU 16GB RAM **+RDBMS**
100,000 users			4 CPU 8GB RAM **+RDBMS**	8 CPU 16GB RAM **+RDBMS**	10 CPU 16GB RAM **+RDBMS**	10 CPU 16GB RAM **+RDBMS**
400,000 users				10 CPU 32GB RAM **+RDBMS**	10 CPU 32GB RAM **+RDBMS**	10 CPU 32GB RAM **+RDBMS**

Appendix 2:   Account import formats

> **Important:**
> Your Excel spreadsheet must be saved in the following format:
>
> • Text (Tab delimited) (*. txt)

Parent only

Parent with code

Parent and child without code