

## Implementing PaperCut NG

*A Guide for Network Administrators and IT Managers*

PaperCut NG is a server-side application which will become an integral part of your IT infrastructure. Implementing PaperCut NG will impact many areas of IT management in addition to the typical “technical realm”. Of equal importance, are the non-technical areas including “usage policies” and end-user relations. The deployment should be planned to ensure a smooth rollout and minimize the impact on network users. This document is designed to assist network administrators and IT managers in **larger organizations** with the rollout process and addresses both the associated technical and administration tasks in an endeavor to minimize disruption to end-users and ensure a smooth transition.

The tasks associated with a deployment in **smaller organizations** are intuitive and the install process may be no more than running the installer and then speaking to users. Skimming this guide however may prove useful for smaller sites as well.

This document details a series of tasks associated with a typical PaperCut NG rollout. It is designed as a starting point for your own rollout plan and will need tailoring to fit individual requirements.

The Plan
<b>TASK 1:</b> Determining Project Scope
<b>TASK 2:</b> Understanding the system
<b>TASK 3:</b> Selecting the “Control Mode”
<b>TASK 4:</b> Pre Installation Preparation
<b>TASK 5:</b> Installing PaperCut in a “test mode”
<b>TASK 6:</b> Testing
<b>TASK 7:</b> Issue Resolution
<b>TASK 8:</b> Preparation for Rollout
<b>TASK 9:</b> Deploying the Client Software
<b>TASK 10:</b> Go-live
<b>TASK 11:</b> Completion
<b>TASK 12:</b> Extending PaperCut

## TASK 1: Determining Project Scope

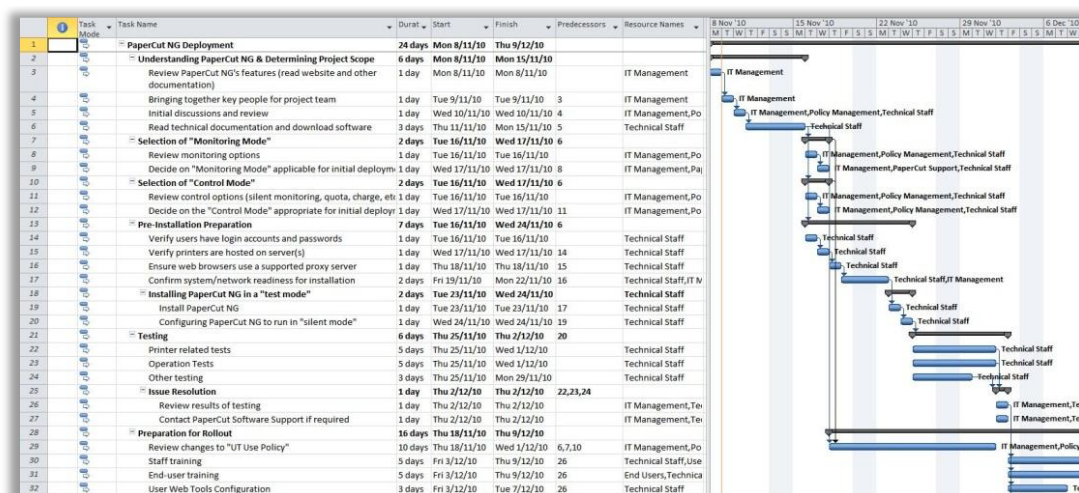
Before diving in and installing PaperCut NG, IT staff should take a few moments to consider the following questions:

- What are my reasons for implementing PaperCut?
- How will I use PaperCut to achieve these objectives?
- What effect will PaperCut have on my end-users and any existing IT usage policy?
- Does PaperCut fit within my budget?
- Who else should be involved in these considerations and the implementation process?

PaperCut can be implemented in a number of different *control modes* ranging from the minimalistic silent logging, to a full user-pays environment. The choice of control mode will influence internal policy and procedures and this should be considered prior to full deployment. It may only take a few mouse clicks to install PaperCut NG and have it up and running at the *technical level* but policy changes at the *management level* may take longer to implement. Discuss this with the right people early. Having “buy in” from all interested parties prior to deployment will ensure a successful project.

The [PaperCut NG User Manual](#) will give a good overview of the installation procedure and day-to-day operation. Interested staff should take some time to read the documentation.

All documentation is available on the [www.papercut.com](http://www.papercut.com) website.



An example project plan and Gantt chart is available from:

<http://www.papercut.com/docs/implementation-guides/PaperCut-NG-Implementation-Example-Project.zip>

A larger view of this plan is also printed at the end of this document. The project plan is available for Microsoft Project 2010 and Project 2007.

## TASK 2: Understanding the system

Before attempting a deployment on a live network, system administrators and IT managers may like to take some time to evaluate and understand the capabilities of PaperCut NG in a testing environment. There is no better way of understanding how a software application works than actually installing and using the system. Many large organizations may have a server or an entire network environment dedicated to testing. Smaller networks might like to install the PaperCut NG trial version on a non-critical desktop system running Windows XP or higher. It only takes a few minutes to download and install PaperCut NG.

The PaperCut NG software runs unrestricted for 40 days to allow you plenty of time to evaluate the many features and functions the software has to offer. If you purchase a license key later, it can be added to the installed copy so you don't have to install and configure again. You can download PaperCut NG from [www.papercut.com/download/ng/](http://www.papercut.com/download/ng/). The user manual in PDF format is also available from this page.



Installing PaperCut NG on a Windows Server in a Test Environment

## TASK 3: Selecting the “Control Mode”

The control mode defines how PaperCut NG interacts with the end-users and controls their usage. The control modes available listed in order of impact are:

- Silent monitoring (no control, only monitoring)
- Active monitoring (enforcement of print policies)
- Simple quota system
- Quota system with user-pays “top ups”
- Up-front payment

### Silent Monitoring

In the *silent monitoring* model all users have unrestricted privilege so printing access is never denied. PaperCut NG will continue to silently collect statistics on activity and its associated cost. All data is reportable and available via PaperCut NG’s administration interface. Silent monitoring mode is popular in a business environment where management needs information on user activity.

### Active Monitoring

A variation of *silent monitoring* is *active monitoring*. In this mode, in addition to simple logging, administrators may implement active features such as:

- Prompt and ask the user to confirm if they don’t print a job in duplex.
- Display a popup and discourage printing of emails.
- Mention print policies in popup’s such as web pages should no be printed in color.
- Push out environmental impact information to inform the user of their usage.

### The Quota System

The majority of organizations that adopt PaperCut NG choose to implement a “quota system”. Under this model users 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. Once the allowance is exceeded access to the printing resources is denied. Some organizations will allow users to request additional quota via management approval, or, in an education environment, it is common to sell users additional quota via TopUp Cards.

#### **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.*

### The Up-Front Payment Model

Full up-front payment environments (user-pays) are used in some schools and universities. Users start off with a balance of zero and need to add money to their account before access to printing services is granted. Often TopUp/Pre-Paid cards (a voucher system) are used as a convenient way to manage the payment process.

The selection of a control model will undoubtedly have “IT usage policy” repercussions. Changing from one control mode to another is an easy process and simply involves

changing the way PaperCut is configured. Once an organization selects a control mode they are not forced to continue with the same control mode, and can vary their approach at any time. PaperCut does not impose any restrictions on this policy decision, however change of control policy may prove to be controversial. For example, moving from a previously free service to a full user-pays model. A common compromise is to “phase in” the change by first moving to a quota system with a free quota allocation, then move to a full user-pays model at a later date. Take the time now to consider the policy and political reproductions of the move.

## TASK 4: Pre Installation Preparation

PaperCut NG requires a correctly configured network environment. Most organizations with an existing “Windows Domain” network set-up should be able to install and use PaperCut NG without any network changes. Smaller organizations running peer-to-peer networks or large organizations with a mixture of operating systems may need to plan some changes.

### Checklist:

#### ☒ Users have logon accounts and passwords

PaperCut NG tracks user identity via their “logon” name. It is important that each user has their own account and password and is aware that their password should remain secret. By default, PaperCut NG does not maintain its own users and passwords, and instead uses the in-built Operating System logon accounts. This means that users and system administrators have to manage logon accounts and passwords for all services including internet access, file permissions, security, PaperCut and general network/computer access. (PaperCut does support “internal users” where the password can be maintained inside PaperCut, but the best-practice option is to always consider domain/system accounts where possible.)

#### ☒ Printers are hosted on a server

PaperCut NG works by intercepting print jobs passing to the printer via a shared print queue. Typically the hosting of a print queue is called acting as a “print server”. PaperCut NG supports Windows, Linux, Novel (OES iPrint) and Mac OS X based print servers. In a typical network environment all printers are installed or configured on a server and then shared to users as network resources. The print server can be an existing file server or a server running other software, however in a large network a dedicated print server is usually recommended. The “print server” model provides a single point of control for printer permissions and queue management, as well as other benefits such as automatic driver deployment and updates.

Although PaperCut NG can centrally track print queues hosted on multiple computers (e.g. locally attached desktop printers), it is best practice to centralize printers onto the minimum number of systems/servers. Typically this involves:

- Ensuring network printers (printers with a network interface) are centrally installed on the server(s) and shared using standard Windows printer sharing.
- Network clients (workstations) map to the printers shared on the network.
- Consider networking existing directly attached printers and hosting server queues.

Additional information on the required setup is covered in the PaperCut NG User Manual.

#### ☒ Printers use supported drivers

PaperCut NG will work with the majority of printer hardware without any additional configuration. Most printers use Postscript or PCL drivers (Postscript and PCL refer to the “printer language” used by the



driver). Many high-end printers support multiple languages including possibly a proprietary language. Technical staff should check which drivers are available. If a selection of drivers is available, select according to this order of preference:

- Postscript (any level)
- PCL 5
- PCL6 or other

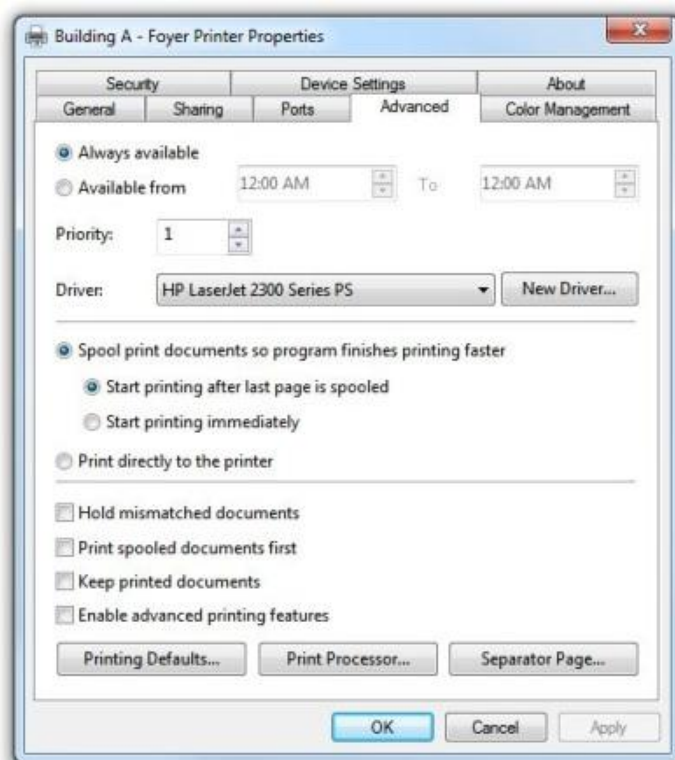
PaperCut supports many proprietary GDI based drivers, but where possible we always recommend standard compliant drivers.

### **☑ Schedule downtime and ensure required information is at hand**

On fully patched servers, a restart should not be required during installation. It is however recommended that a 30-minute block of downtime be scheduled to “take the pressure off” during initial testing. Ensure end-users are aware of the potential disruption of print services.

Technical staff should also ensure they have technical information at hand including:

- Name of the domain server or an Active Directory node (or LDAP settings if using LDAP servers)
- User name and passwords for both a network and local Administrator level accounts



**Using a Postscript print driver**

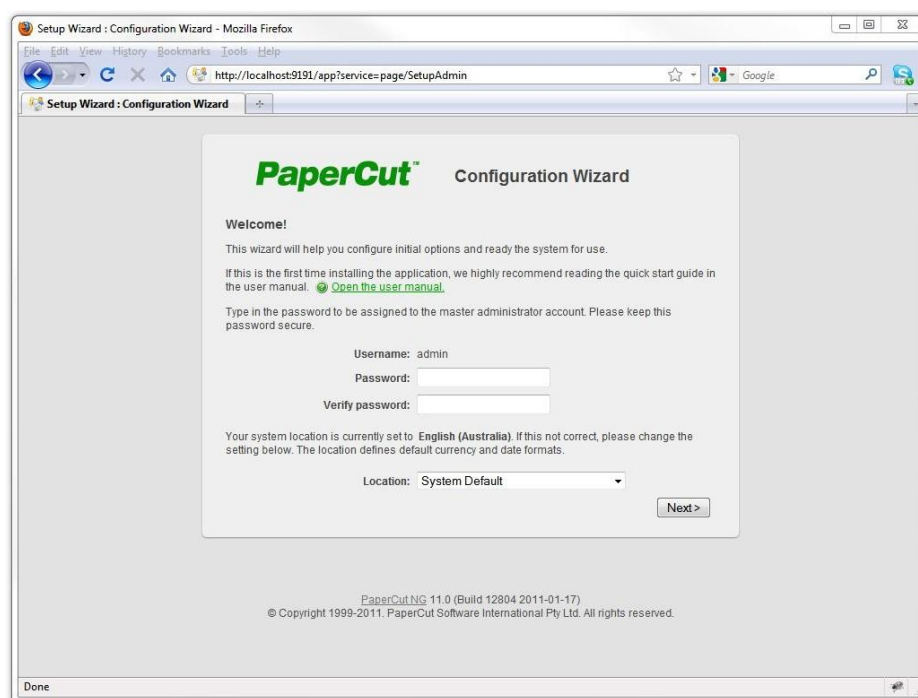
## TASK 5: Installing PaperCut in a “test mode”

It is recommended practice to first roll out PaperCut NG in “silent monitoring” mode, even if your organization’s immediate goal is to use PaperCut NG to implement quotas or charging. Silent monitoring mode will allow testing and verification of the setup “behind the scenes” without the worry that PaperCut NG might start denying access to printing resources.

### How to setup “silent monitoring” mode

The idea is to set all users to have “unrestricted” privileges so that in the event that their account drops to zero, printing access will not be denied. We recommend the following installation procedure:

- Install PaperCut on your server(s).
- Run PaperCut for the first time. The setup wizard will open.
- Follow the directions, selecting your domain server and other settings.
- During the wizard, un-tick the “Deny access when users run out of credit/quota” option
- Continue configuration by setting costs, discounts, filters and restrictions to define the control parameters that PaperCut NG will use.



### Setup option to ensure printing is not disrupted

More information on the installation of PaperCut NG is covered in the “Quick Start” section of the PaperCut NG User Manual.

## TASK 6: Testing

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

### Printer Related Tests

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

**METHOD:** Log on to a network workstation under a standard user account and print a test documents for each test case. Repeat the test cycle for all printers (or printer types if many printers).

Test	Test Criteria	Passed?
<b>Print a single page document.</b>	The Print Log lists the job as a single page and the calculated cost is correct.  No error messages are listed in the PaperCut NG Application Event Log.	
<b>Print a multi-page document</b>	The Print Log lists the job with the correct page count and the calculated cost is correct.  No error messages are listed in the PaperCut NG Application Event Log.	
<b>Print a color document with images</b>	The Print Log lists the job with the correct page count and the calculated cost is correct.  No error messages are listed in the PaperCut NG Application Event Log.	
<b>If Advanced Charging options are used, test other attributes such as Grayscale and/or Duplex discount.</b>	The Job Log lists the job with the correct calculated cost.  No error messages are listed in the PaperCut NG Application Event Log.	
<b>User Accounting</b>	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.	
<b>Printer Accounting</b>	Verify that all printed test documents have increased the printer's page count counter.	



## Operational Tests

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

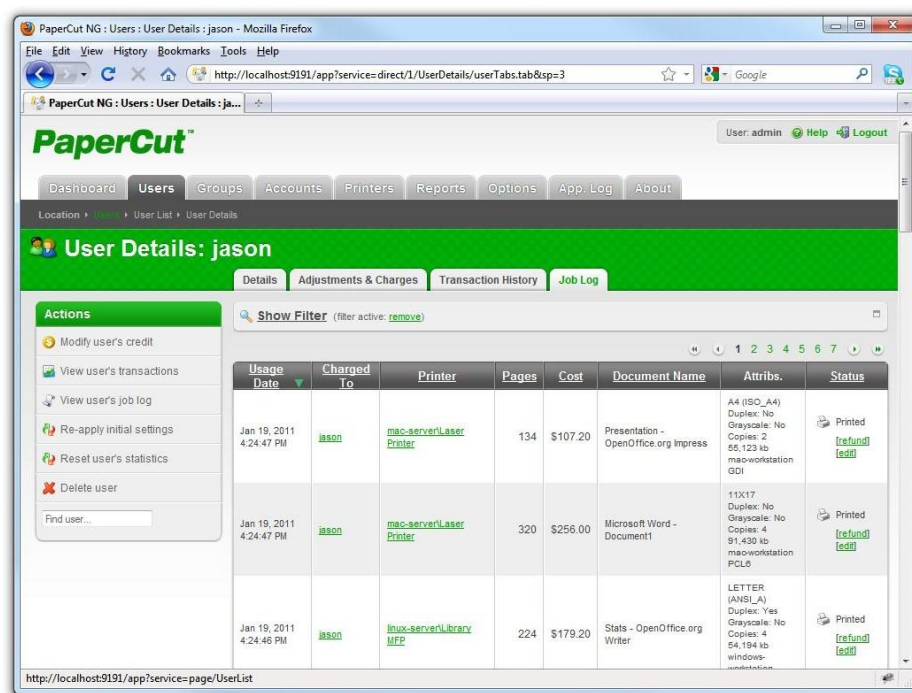
**METHOD:** Perform common user management tasks and verify the operations work and log as expected. Perform each of the following tests in the standard PaperCut NG Administration Console, and then repeat the relevant tests in the User Web Tools interface.

Test	Test Criteria	Passed?
<b>Set User's Credit</b>	Select a test user in the PaperCut NG Admin Console and add a non-zero amount to their account. Verify the amount is applied and a transaction was recorded against the user's account. View transactions by clicking on the user and selecting the Transaction History tab.	
<b>Changing a user's restriction</b>	Select a test user, set their credit to zero and change their status from "unrestricted" to "restricted". Verify that printing use is denied and that the user receives the "popup" message.	
<b>Auto Scheduling</b>	Set up rules for Quota Scheduling under the Groups section to "allocate credit" on a daily basis. For example, place a \$1.00 daily allocation on the "[all users]" group. Check in 24 hours and verify the credit was allocated properly to the users accounts and the event was recorded in the users Transaction History and the App. Log.	
<b>User Creation</b>	Define "New User Settings" rules under the Groups section to define how new users accounts are created. Add a test user to the domain. Print a document from the test user account. Verify that the account was created as per the defined rules. Delete the test account from both the domain and PaperCut NG.	
<b>Remote Access</b>	Repeat the first two tests from a remote system logging in using a standard web browser accessing the URL: <code>http://[server]:9191/admin</code>	
<b>User Transfer</b>	Perform this test if your organization plans on allowing end-users to transfer funds to other users. Log on as a test user and open the browser to the URL: <code>http://[server]:9191/user</code> . Select the "transfer" option and transfer funds to another account. Verify the transfer is logged as a transaction in both users Transaction History.	
<b>TopUp Cards</b>	Perform this test if your organization plans on using TopUp/Pre-Paid cards. Follow the instructions in the PaperCut NG User Manual to create a test batch of 10 cards. Import the TopUp card numbers (the *.tnd file) into the system. Log on as a test user, enter the card number and verify the equivalent value were applied.	

## Other Testing

We suggest run PaperCut NG in "silent mode" for testing purposes for a period of one week. Regularly inspect the PaperCut NG "Application Event Log" for error messages or reported

problems. This testing phase can be undertaken in parallel with many of the following tasks. Technical staff should take the opportunity to familiarize themselves with the application.



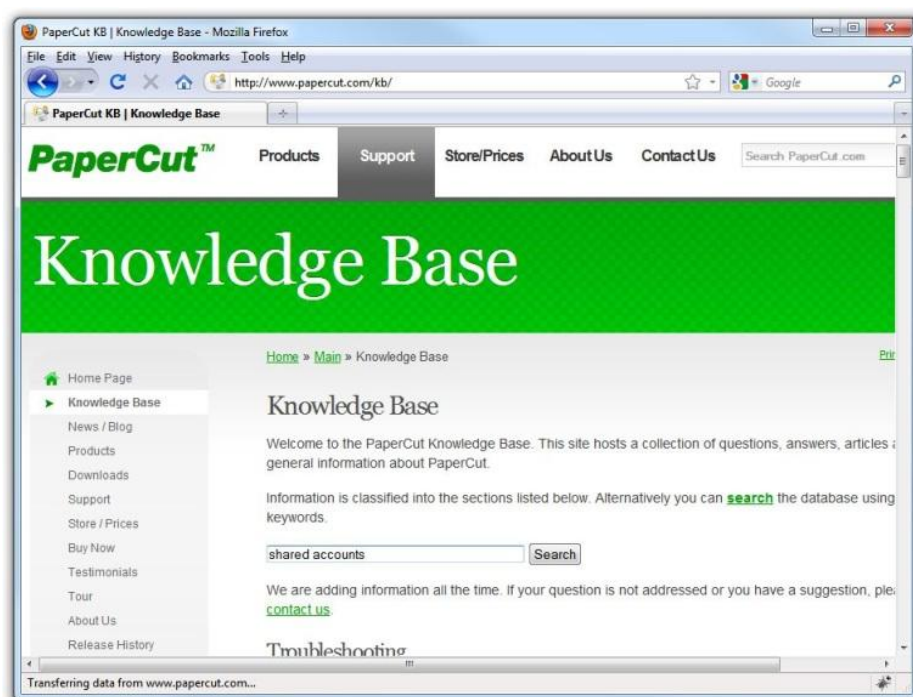
### Verifying that transactions are being tracked accurately

## TASK 7: Issue Resolution

If you experience any problems, need advice with set-up or configuration, or have any general questions that cannot be resolved internally, please contact the PaperCut Software support team at [support@papercut.com](mailto:support@papercut.com). The support team is always happy to assist.

Unlike many organizations, PaperCut Software support is done directly by the development team, meaning no question is too hard. The team is technically focused (no marketing fluff) and one of our goals is technical transparency – provide source code level access, acknowledge bugs, and always provide technically correct answers.

The PaperCut NG online knowledge base is extensive and easily searchable. If you are looking for a feature or best practice, why not visit the [Knowledge Base](#)?



Using the PaperCut Software online Knowledge Base

## TASK 8: Preparation for Rollout

PaperCut NG is now installed and tested and much of the technical work is complete. IT management should now address policy related issues, user training and end-user experience.

### Policy Change

Most organizations have a formal “acceptable use policy” or a general “IT usage policy” covering the use of IT equipment. Smaller organization may have a “usage policy” that’s informally conveyed by management. PaperCut NG will have an effect on end users and their use of the IT equipment. 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 will be 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 special web browser based management interface designed for non-technical users. Even though the PaperCut NG administration web interface is simple and intuitive, technical staff should 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 administration interface. This step will require adding the user’s name to the list of approved administrators. The process is covered in detail in the PaperCut NG User Manual section *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 will have minimal impact on end-users. In most cases users will just continue to use the network as they always have. Consider the following briefing 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 is/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. e.g. 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 via the user web tools interface
- 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 is to add credit to their account
- Instruct users on how they can monitor their account status and usage via the user web tools interface
- Provide a general explanation of any changes to the “IT use policy”

In small organizations it may be possible to convey this information in a single day. With larger organizations, or organizations where the policy change is perceived as substantial, consider giving users plenty of time prior to “go-live”. Appendix H in the PaperCut NG User Manual includes a number of *Example End User Information Sheets* that may be used as a starting point for your own information sheets or Intranet pages.

### End-user web access configuration

The user web tools interface can be quickly tailored to fit local requirements. PaperCut NG provides configuration options to conveniently “hide” or disable selected features. Take the time now to enable and disable features applicable to the local situation and requirements. For example if your organization does not intend to use TopUp/Pre-Paid cards, the card link can be removed from the web tools interface. Additional details including an explanation of the options are detailed in the PaperCut NG User Manual section *Customizing the User web pages*.

Technical staff with HTML experience may also choose to tailor the “look-and-feel” of the user web tools interface. Ideas include:

- Coordinating the page design with an existing “Intranet” site
- Adding text on key pages to explaining the organization’s IT policies and procedures
- Additional instruction text to assist users with managing their account

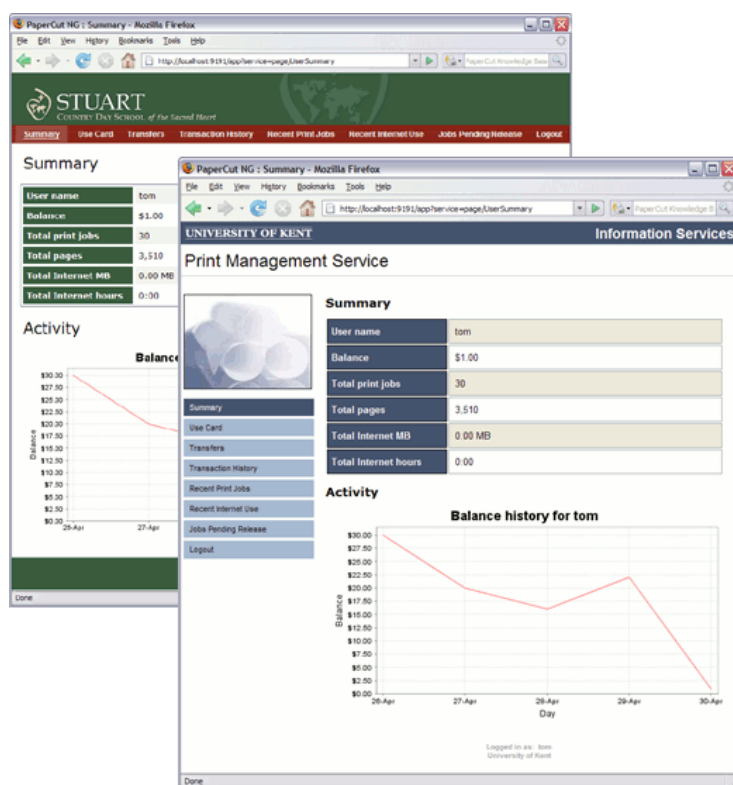
**TIP:** Much of the functionality in the web interface has come from suggestions from organizations running PaperCut NG. If you have an idea, let the PaperCut Software development team know so they can evaluate it for inclusion in an up-coming release.

## TASK 9: Deploying the Client Software

This task is undertaken by technical network staff and is usually run in parallel with testing and the previous task. The PaperCut NG User Client is small client application that displays the user's account status upon login. It is useful in a quota or charging environment as it informs users of their account status each time they sit down and log into a system. The client software is also used to display the account selection popup if you are providing users with access to shared accounts. Most organizations, except those undertaking silent monitoring will deploy the client software.

Client Deployment Options	
<b>Zero-install Deployment:</b>	Run the client (pc-client-local-cache.exe) directly off the server share.
<b>Local Install:</b>	Installing the client software using the provided installer. A good option for non-domain laptops.

Additional information on deploying the client software, including automated deployment methods are detailed in the PaperCut NG User Manual.



The PaperCut end-user web interface (customized) and client software



## TASK 10: 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. You are now ready to “go-live”! In a charging or quota environment this simply involves changing the users (or the selected sub-set of users) to “restricted” mode and applying their initial starting credit.

To change the users’ operating mode, consider using the Group / [All Users] button in the PaperCut NG Admin Console. This provides a simple way to set the users’ credit and privilege mode at the domain group level in one simple step.

**Example:**

Smithtown High School has completed testing, staff training, and all students are aware of the policy change. On the first day of this month the quota system will come into effect. Sally, the network administrator, will use the New User Settings and optionally Bulk User Actions to apply the following policy:

**Junior Students:**

\$10.00 starting amount

Restricted user

Group rules setup to allocate an additional \$10.00 per month allowing the user to accumulate up to \$20.00

**Senior Students:**

\$15.00 starting amount

Restricted user

Group rules setup to allocate an additional \$15.00 per month

**Teaching Staff:**

\$0.00 starting amount

Unrestricted user

Amount will count down from zero and the amount will be billed back to faculty budgets in agreed proportions at the end of every semester.

## TASK 11: Completion

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.

### Suggested Daily Tasks:

Undertake a full backup of all files located under:

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

**Mac:** /Applications/PaperCut NG/

**Linux/Novell:** ~papercut/

Use automated backup software. This will ensure all PaperCut NG data files can be restored in the event of system failure or other unforeseen problems. Important: PaperCut NG includes its own point-in-time 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 Event Log (App. Log) for any important messages or error events. The system can also be configured to automatically email nominated Administrators on error level events.
- Inspect activity logs to ensure PaperCut NG is continuing to record all activity.

### Suggested Monthly Tasks:

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

## Task 12: Extending PaperCut

Now that PaperCut NG is in place, monitoring, controlling and reporting on your printing environment, why not take the time to fine tuning day-to-day operations and increasing service levels by offering new features.

### Web Print

As a core feature of PaperCut NG, [Web Print](#) enables printing from unmanaged, workgroup or user-owned devices, such as laptops and netbooks, without the overhead of installing printer drivers and managing server authentication.

### Printer Scripting (routing, redirection and user interaction)

Advanced Scripting increases the functionality of PaperCut NG beyond what the current interface provides by allowing you to create JavaScript based recipes that fit your environments print policy requirements. You can perform complex tasks such as:

- Display a popup message if a user forgets to select duplex on large jobs.
- Show a dialog displaying environmental impact statistics about their job, such as, the amount of carbon dioxide equivalent greenhouse gases produced.
- Prompt the user to confirm large jobs before printing.
- Automatically route large jobs to more efficient high volume printers.
- Giving discounts during off-peak times.
- Least-cost routing - suggesting a more cost effective printer.
- [And much more...](#)

### Environmental Impact Reporting

Do your users have any idea of how much they print, the impact on printing and how they compare against the company average? Consider deploying some of PaperCut's environmental impact features. This could take the form of simply running an environmental impact report and presenting the figures in a company/organization newsletter, or could be as visible as pushing out a [desktop widget](#) that allows users to monitor their user in real-time.

### Scheduled Reporting

Using [print management software](#) is not just about limiting usage, it is also about educating users and providing stake holders with the right information. Now that PaperCut NG is collecting data, why not turn that data into information by implementing some of the [80+ scheduled reports already available](#).

#### One-click Reports

Get access to the most important data in real-time - straight from your web browser, from anywhere on your network

#### Ad-hoc Reports

Create reports with custom data by specifying date ranges, filtering and sorting by the data available. Great to give you different perspectives on printing usage

## Schedule / Email Reports

Create reports that will be regularly generated and emailed to members of your organization or scheduled to be saved to disk. Great for sending regular reports to managers without even needing to compile it first

## Backups

Expect the worst and plan for it! As with any application, it is important to ensure that backups are performed regularly. PaperCut NG includes a [built-in backup process](#) that saves the state of the database to a file. The in-built backup functionality is designed to complement (not replace) a good system-wide backup policy and procedure.

## Delegating Administration Privileges

In most PaperCut NG environments there will be multiple users who will require some level of access to the system. By using the built-in “admin” account, these users will have access to all parts of the PaperCut NG system. Why not spend the time to [assign administrator access](#) to certain users or groups of users providing a better user experience and also guaranteeing privacy for those who require it.

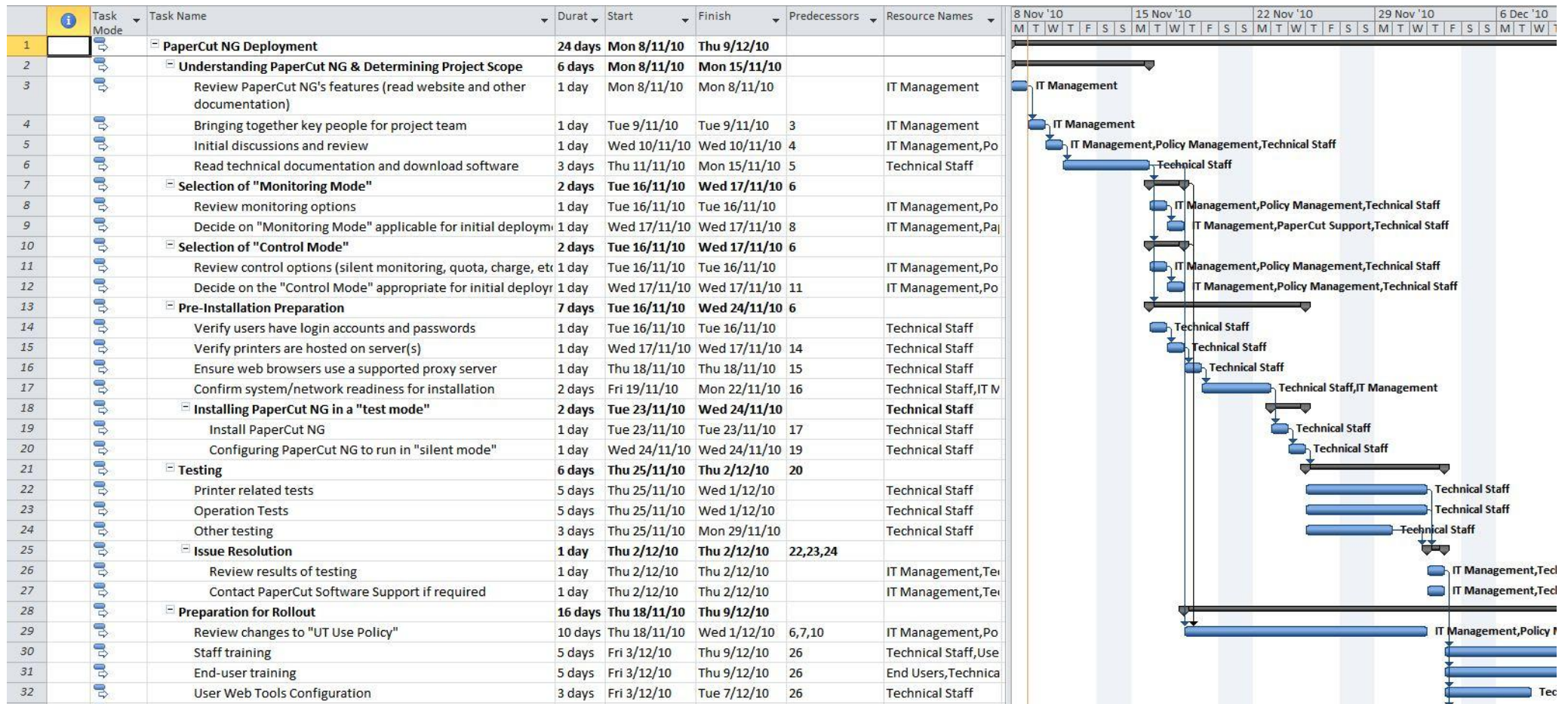
## Acknowledgements

This is an evolving document. PaperCut Software would like to thank the organizations that have shared their experiences and contributed to this document.

## Feedback

If you have any suggestions, or would like to share your experiences, please contact us at [support@papercut.com](mailto:support@papercut.com). We would love to hear from you.

# Implementing PaperCut NG - Sample Project Plan



Download from: <http://www.papercut.com/docs/implementation-guides/PaperCut-NG-Implementation-Example-Project.zip>