



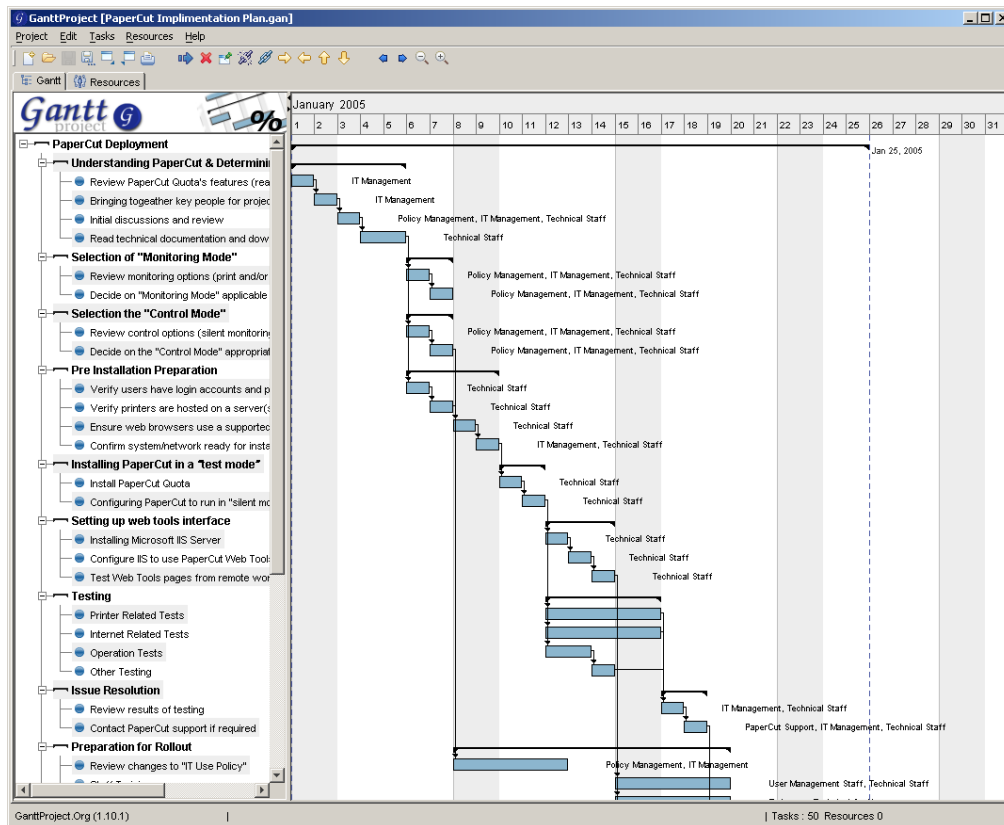
Implementing PaperCut NG

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 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.

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

The Plan
TASK 1: Determining Project Scope
TASK 2: Understanding the system
TASK 3: Selecting the “Control Mode”
TASK 4: Pre Installation Preparation
TASK 5: Installing PaperCut in a “test mode”
TASK 6: Testing
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TASK 10: Go-live
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An example project plan and Gantt chart is available from: <http://www.papercut.com/docs/PaperCut-Quota-Implementation-Plan.zip>. The full plan is also printed at the end of this document. The project plan was created with GanttProject – a free program available from: <http://ganttproject.sourceforge.net/>

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 Guide and Fact Sheet 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 website.

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 system 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.

PaperCut 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 <http://www.papercut.com/products/ng/download/>. The user guide in PDF format is also available from this page.

TASK 3: Selecting the “Control Mode”

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

1. Silent monitoring (no control, only monitoring)
2. Simple quota system
3. Quota system with user-pays “top ups”
4. Up front payment

In more detail:

Silent Monitoring

In the “silent monitoring” model all users have “unrestricted” privilege so access is never denied. PaperCut 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.

The Quota System

The majority of organizations that adopt PaperCut choose to implement a “quota system”. Under this model users are allocated a “budget” on either a daily, weekly or



monthly basis. It is the user's responsibility to manage their own usage to stay within their allocated allowance. Once the allowance is exceeded access to the resource 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 internet use (billed by time) and 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 services is granted. Often TopUp/Pre-Paid cards are used as a convenient way to manage the payment process.

The selection of 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 repercussions of the move.

TASK 4: Pre Installation Preparation

PaperCut NG requires a correctly configured network environment. Most organizations with a "Windows Domain" network set-up should be able to install and use PaperCut NG without any network reconfiguration. Smaller organizations running simple 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 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 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 “captured” 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 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 captured 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 Guide.

Printers use supported drivers

PaperCut 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:

1. Postscript (any level)
2. PCL 5
3. 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

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 to implement quotas or charging. Silent

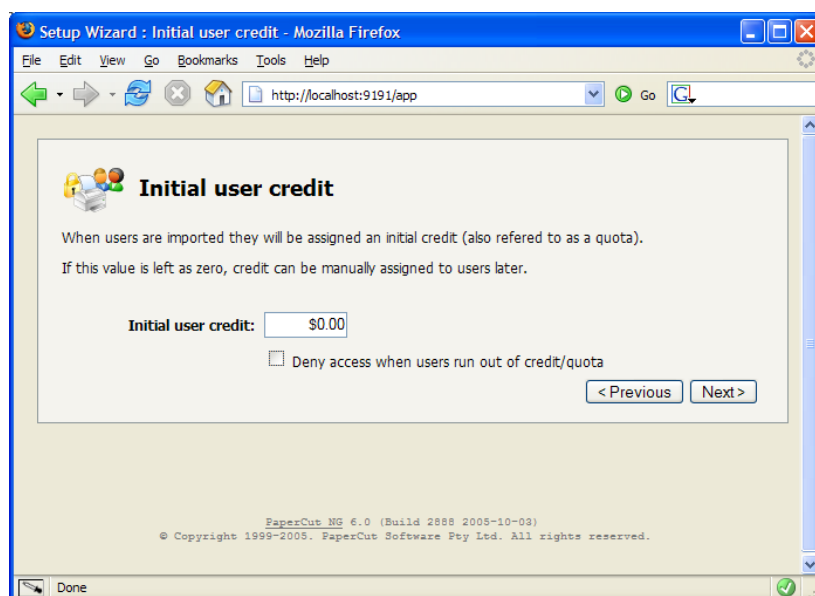


monitoring mode will allow testing and verification of the setup “behind the scenes” without the worry that PaperCut might start denying access to resources.

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, access will not be denied. We recommend the following installation procedure:

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



Setup option to ensure printing is not disrupted

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



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, 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
Print a single page document.	The Print Log lists the job as a single page and the calculated cost is correct. No error messages are listed in the PaperCut Application Event Log.	
Print a multi-page document	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 Application Event Log.	
Print a color document with images	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 Application Event Log.	
If Advanced Charging options are used, test other attributes such as Grayscale and/or Duplex discount.	The Print Log lists the job with the correct calculated cost. No error messages are listed in the PaperCut Application Event Log.	
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	

Operational Tests

AIM: 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 Administration Console, and then repeat the relevant tests in the Web Tools interface.

Test	Test Criteria	Passed
Set User's Credit	Select a test user in the PaperCut 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 double clicking on the user and selecting the Transaction History tab.	
Changing a user's restriction	Select a test user, set their credit to zero and change their status from "unrestricted" to "restricted". Verify that printing and/or internet use is denied and that the user receives the "popup" denied message.	
Auto Scheduling	Set up rules 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.	
User Creation	Define "Initial Credit" 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.	
Remote Access	Repeat the first two tests from a remote system logging in using a standard web browser accessing the URL: http://[server]:9191 /admin	
User Transfer	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: http://[server]:9191/user. Select the "transfer" option and transfer funds to another account. Verify the transfer is logged as a transaction in both users Transaction History.	
TopUp Cards	Perform this test if your organization plans on using TopUp/Pre-Paid cards. Follow the instructions in the PaperCut NG User Guide 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 monies were applied.	

Other Testing

We suggest run PaperCut in "silent mode" for testing purposes for a period of one week. Regularly inspect the PaperCut "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.

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 support team at support@papercut.com. The support team is always happy to assist. Unlike many organizations, PaperCut 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. If you have a complex question please arrange a time to call the PaperCut Software Pty. Ltd. office. The PaperCut development team is also happy to arrange an online conference using technologies such as voice over Internet or video chat.

TASK 8: Preparation for Rollout

PaperCut 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 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 provides a special web browser based management interface designed for non-technical users. Even though the *Web Tools* 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 guide 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 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 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 and/or internet 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. For example, how to purchase a TopUp card
- Instruct users on how they can monitor their account status and usage via the 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 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 Guide 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 end-user web 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 guide section [Customizing the User web pages](#).

Technical staff with HTML experience may also choose to tailor the “look-and-feel” of the 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. If you have an idea, let the PaperCut 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 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
Zero-install Deployment: Run the client (pc-client-local-cache.exe) directly off the server share.
Local Install: 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 Guide.

TASK 10: Go-live

Installation and testing is 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 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 affect. Sally, the network administrator, will use the Group Level Functions to apply the following policy:

Junior Students:

\$10.00 starting amount



Restricted privilege
Group rules setup to allocate an additional \$10.00 per month

Senior Students:

\$15.00 starting amount
Restricted privilege
Group rules setup to allocate an additional \$15.00 per month

Teaching Staff:

\$0.00 start amount
Unrestricted privilege
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 is now controlling and monitoring. 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 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 compliment rather than replace a good off-disk package strategy.*

Suggested Weekly Tasks:

- Inspect the PaperCut Application Event Log (App. Log) for any important messages or error events. The system can also be configured to automatically email you on error level events.
- Inspect activity logs to ensure PaperCut is continuing to record all activity.

Suggested Monthly Tasks:

- Check the PaperCut 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 internet fees if the Internet Control module is used. Ensure that end-users are informed if prices are to change.



Acknowledgements

This is an evolving document. PaperCut Software would like to thank the organizations that have shared their experiences and contributed to this document. Special mention also to the *GanttProject* development team for their free project planning application.

Feedback

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

Implementing PaperCut NG - Sample Project Plan

