PaperCut Kyocera Embedded Manual

Contents

1 Overview

This manual provides an overview of the installation, configuration and operation of PaperCut's embedded software Multi-Function Device (MFD) solution for Kyocera. For general documentation on PaperCut MF, please see the [PaperCut MF manual](#) (also available as online help in the PaperCut administration web interface).

Today's MFDs are intelligent – they have touch screens and offer the ability to run applications directly on the device. The goal of PaperCut Software's embedded MFD solution is to leverage these smart devices and provide walk-up copier users with the same rich application features provided in the print control area. These include:

- Secure access to device functions via Card Swipe, Username plus Password, etc.
- End user authentication including integration with single sign-on environments
- Monitoring and control of photocopying, scanning, faxing and on-device printing from device storage and USB drives to support quotas, charging, allocation and logging
- Allocation of all job types to accounts/departments/cost-centers/projects
- Account invoice and comment options are supported
- Release print jobs from a hold/release queue, also known as Secure & Find Me Printing
- Group based access control: Limit access to color copying or to the device as a whole to selected user groups.

Highlights of the embedded solution include:

1.1 Consistency

The embedded solution is developed by the PaperCut Software development team and the MFD interface is consistent with the workstation print interface, so users only have to learn one system.

1.2 Integration

PaperCut is a single integrated solution where print and copier control are all managed in the one system. Users have a single account and administrators have the same level of reporting and administration for all services. The embedded solution interacts with the PaperCut server using a Service Oriented Architecture (SOA) and web services based protocols.

1.3 Rate of development

PaperCut is developed under a release-often policy where new features are made available to users as soon as they are complete. Unlike hardware based solutions, new features can be delivered to users regularly as software updates.

1.4 Vendor neutrality

PaperCut remains true to its vendor neutral stance. All embedded solutions are equal and support all server OS's including Windows, Linux and Mac.

1.5 Security

A large percentage of PaperCut's user base is in Education environments where security is important and all solutions are developed with a strong security focus. Where security objectives can't be satisfied, any deficiencies are fully disclosed.

2 Installation

This section covers the installation of the PaperCut embedded application for compatible Kyocera devices. The embedded application will allow the control, logging and monitoring of walk-up off-the-glass copier usage and may serve as a print release station for network prints (for information on tracking network printing see the PaperCut user manual).

2.1 Kyocera device compatibility

PaperCut supports selected multi-function Kyocera devices supporting the HyPAS framework. This includes:

- TASKalfa 552ci, 520i, 500ci, 420i, 400ci, 300ci, 306i, 300i, 256i, 250ci, 265ci
- TASKalfa 2550ci, 3050ci, 3550ci, 4550ci, 5550ci, 6550ci, 7550ci
- TASKalfa 3500i, 4500i, 5500i, 6500i, 8000i
- TASKalfa 3051ci, 3501i, 3551ci, 4501i, 4551ci, 5501i, 5551ci, 6551ci, 7551ci
- all ECOSYS/FS series devices with HyPAS including FS-C2626MFP, FS-C2526MFP, FS-3540MFP, FS-3640MFP, note: these devices will have to have a Compact Flash (CF) card (older models) or SD card (newer models) installed

PaperCut makes all attempts to keep the product compatibility information in this manual current. However, we make no warranties, express or implied, with respect to manufacturer's products or the interoperation with the listed PaperCut product(s). We offer 40 day trial versions of PaperCut software to assist you with compatibility testing with your network setup.

2.2 Requirements

Before installing the PaperCut Embedded Application into the Kyocera device, ensure that basic monitoring of network printing has been setup up and tested for this device. The device should show up in the printer list in the PaperCut web interface and have a few print jobs in its print history.

After that, ensure that the following points are checked off before getting started:

- PaperCut is installed and running on your network. Please see the 'Introduction -> Quick Start Guide' section of the PaperCut user manual for assistance.
- Ensure that the Kyocera device is connected to the network.
- ECOSYS/FS series devices only: Ensure that the Compact Flash/SD card is installed. Consult the device manual or your service technician for details.
- Have available the network name or IP address of Kyocera device.
- Have available the username and password for administrator access to the devices internal web interface.
- It is recommended that the device be configured with a *static IP address*.
- Verify that firewalls or other network restrictions don't prevent the device's access to the PaperCut server on port 9193.

2.3 Setup procedure

2.3.1 PaperCut settings

o Ensure PaperCut is setup on your server and monitoring print activity before proceeding to install the embedded application.

o Log into the PaperCut administration interface using a web browser (e.g. http://papercut-server:9191/admin).

o Navigate to 'Options -> Advanced' and ensure the option 'Enable external hardware integration' is enabled.

o Press 'Apply'.

2.3.2 Install the PaperCut application

- The PaperCut embedded application for Kyocera is provided in a file named `pc-kyocera.pkg`, located under your PaperCut installation directory on the server, in the subdirectory `[app-path]/providers/hardware/kyocera/`
- Copy this file to a FAT32 formatted USB drive.
- At the copier, press the "System Menu" button on the panel, page down until you see the "Application" item and press it. At this point you may have to log in with the device's built-in device administrator account.
- Press the "Add" button.
- Insert the USB drive and wait for "PaperCut" to appear in the list.
- Press the check box next to the PaperCut list item and press "Install" and confirm with "Yes".
- Press "Remove USB drive" and confirm with "OK".
- Press Close.
- Select the new PaperCut list item and press "Activate".
- Now wait up to a minute until the PaperCut setup screen shows.

2.3.3 Configure PaperCut embedded settings

- At the setup screen, enter a descriptive device name and the IP address or hostname of the PaperCut server.
   - o Note: The device name should be chosen to uniquely identify this Kyocera device among all devices controlled by PaperCut, including devices from other manufacturers. E.g. "Kyocera 1" or "Library Copier".
- Optionally specify an override for the device's locale (language setting) in the form `xx` or `xx_XX`, e.g. `fr` for French or `zh_HK` for Chinese (Hong Kong).
- Click "Apply".

Alternatively:

- The embedded application can also be configured via a web browser from your desktop workstation. Go to http://<device-ip>:8080/papercut/admin and log in as device "Admin" user. This is the copier's "Admin" user, not PaperCut's "admin" user. Then proceed as above.

2.3.4 Additional network security (optional)

The MFP communicates with the PaperCut server over the network (e.g. to authenticate users or release print jobs). To provide an additional level of security, PaperCut may be configured to only allow device connections from a restricted range of network addresses. This ensures that only approved devices are connected to the PaperCut server.

By default PaperCut will allow device connections from any network address. To restrict this to a subset of IP addresses or subnets:

1. Log in to the PaperCut administration web interface at http://<papercut-server>:9191/admin
2. Go to the Options→Advanced tab and find the "Security" section.
3. In the "Allowed device IP addresses" field enter a comma-separated list of device IP addresses or subnets (in the format <ip-address>/<subnet-mask>).
4. Press the "Apply" button.
5. Test the devices to ensure they can continue to contact the PaperCut server.

2.4 Verify the successful installation and configuration

- On the device screen you should see a login prompt asking you to press the "Username and Password" button.
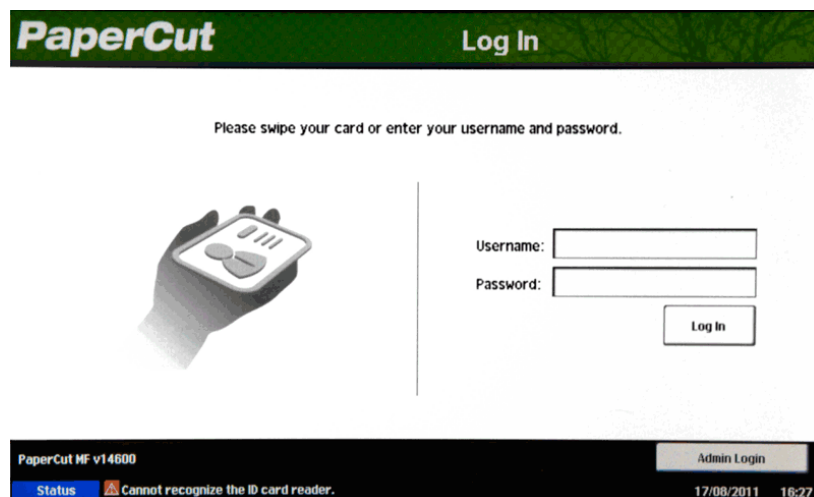
- Log in to the PaperCut administration web interface at http://<papercut-server>:9191/admin. On the Devices tab, you should see the device listed under the name chosen in section 2.3.3.
- You should now proceed to configure page costs, the authentication methods you will allow and other settings relating to the device.

3 Upgrading to a newer version

The procedure for upgrading an existing embedded application to a newer version is similar to the initial installation. Please note that only the device-level installation needs to be performed, and you shouldn't have to perform any additional configuration within the PaperCut administrator interface.

After upgrading, it's worth quickly checking the Embedded Application's version number now matches the expected value.

4 Post-install testing

After completing installation and basic configuration it is recommended to perform some testing of the common usage scenarios. This important for two reasons:

1. To ensure that the embedded application is working as expected

2. To familiarize yourself with the features and functionality of PaperCut and the embedded application.

This section outlines four test scenarios that are applicable for most organizations. Please complete all the test scenarios relevant for your site.

4.1 Test preparation

To complete these tests it is recommended you use two test users so that each can be configured differently. These users are:

- 'testusersimple' – is used to perform basic copier monitoring and control and to perform print release tests.
- 'testuseradvanced' – is used to perform copier monitoring and control with account selection enabled (i.e. to charge copying to accounts/departments/cost centers/etc).

To setup these users in PaperCut:

1. Create the 'testusersimple' and 'testuseradvanced' users in your Active Directory or LDAP directory.
2. Log in to the PaperCut's admin web interface
3. Go to the "Options->User/Group sync" page and press "Synchronize Now".
4. Once the sync is complete, the users will be added to PaperCut.

The next step is to configure the users. To configure 'testusersimple':

1. In PaperCut, select the "Users" tab

2. Select the 'testusersimple' user.

3. Set the user's balance to $5.00 and verify the account is set to "Restricted".

4. Verify that this user is set to "Automatically charge to personal account" in the "Account selection" options.

5. Press the "OK" button to save.

To configure 'testuseradvanced':

1. In PaperCut, select the "Users" tab

2. Select the 'testuseradvanced' user.

3. Change the "Account Selection" option to "Standard account selection popup" and enable all the account selection options.
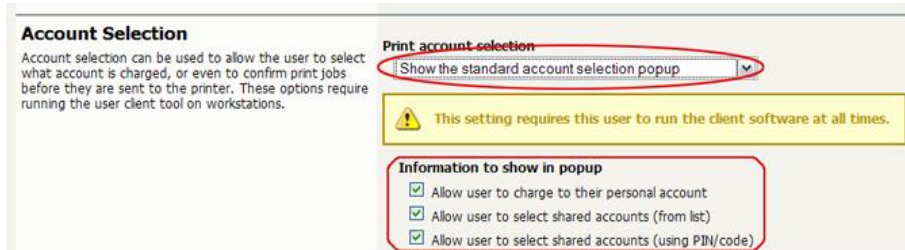
4. Press the "OK" button to save.

4.2 Scenario 1: Standard copying

Standard copying involves monitoring/charging printing to a user's personal account. This is most commonly used for student printing or basic staff monitoring. Users can also be configured for unrestricted printing, which is commonly used for staff/employee use.

At the photocopier:

1. The photocopier should be showing the screen as shown below.
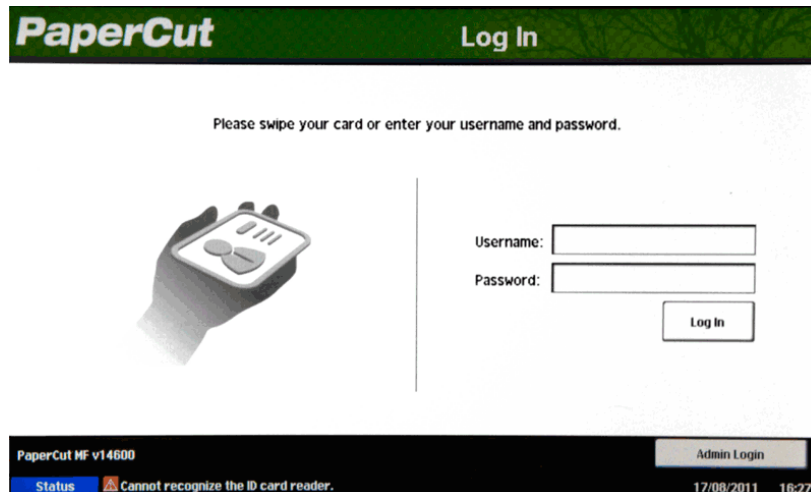
2. Press the "Username and Password" button.

3. Press the blank field underneath "Username", enter the username "testusersimple" using the on-screen keyboard and press "OK". Press the "Password" field and enter the password for this account.

4. Press "OK".

N.B. The next part of the workflow will depend on whether you have followed any of the configuration suggestions in section 6.3

5. You will see an account confirmation screen with a "Next" button, press "Next".

6. You will now see the home screen:

7. At this point the copier will be enabled for usage.

8. Perform some test copying, i.e. press the green button on the device button panel and perform a copy as normal.

9. Once completed copying press the "Log Out" button on the device button panel.

Back in the PaperCut application verify that the copier activity was recorded and the user's account deducted.

1. Log in to PaperCut.

2. Select the device from the "Devices" tab.

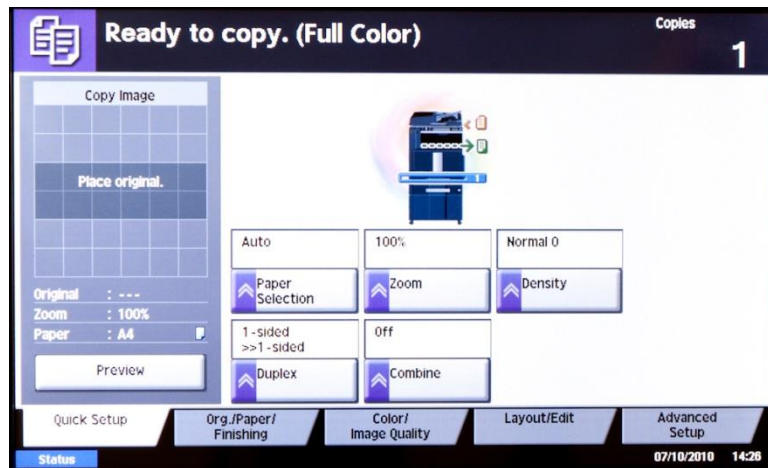3. Select the "Job Log" tab. This will list all recent copying activity on the copier. The copying just performed as the test user should be listed. Verify the details of the copy job that was just performed.

| Usage Date ▼	User	Charged To	Pages	Cost	Document Name	Attribs.
Apr 16, 2008 2:59:30 PM	testusersimple	testusersimple	2 (Color: 0)	$0.20	[copying]	A4 (ISO_A4) Duplex: No Grayscale: Yes

4.3 Scenario 2: Copying with account selection

Firstly a test account should be created:

1. Log into PaperCut, select the "Accounts" tab.

2. Select the "Create a new account…" action link on the left.

3. Enter an account name "Test Account 1".

4. Enter PIN/Code "2233".

5. Press "Apply".

6. Select the "Security" tab and allow all users to access that account by adding the "[All Users]" group.

At the photocopier:

1. The photocopier should be showing the "Authentication" screen as before.

2. Log in as "testuseradvanced" using the password for that account and press "OK".

3. You will see the following:
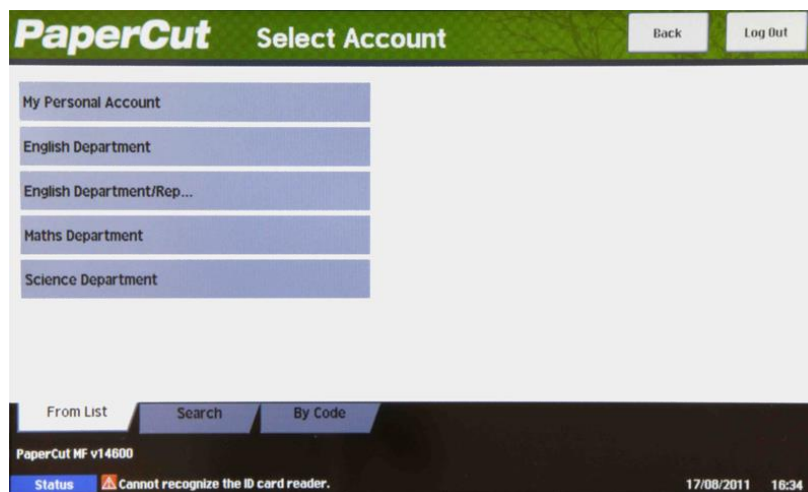
4. Press "Test Account 1".

5. The confirmation screen will show that "Test Account 1" has been selected. Acknowledge by pressing "Next".

6. Now perform copying as normal and finally log out using the "Log Out" button as before.

Note: The account selection workflow can vary according to the user options selected. For example a user configured to see the Advanced Account Selection popup may see an additional dialog asking for comment and invoice information. At the device level, you may also configure whether you wish to see the Account Summary screen or not.

Back in the PaperCut application verify that the copier activity was recorded and the user's account deducted.

1. Log in to PaperCut

2. Select the device from the "Devices" tab

3. Select the "Job log" tab. This will list all recent copying activity on the copier. The copying just performed as the test user should be listed.

4. Verify the details of the job (i.e. that the job was charged to the selected account).

5. In the log details, click on the "Charged To" account name to view the account's details.

6. Selecting the "Job log" tab will display all print/copy activity for the account, and will show the test photocopying that was performed.

4.4 Scenario 3: Print release

The embedded application may also be used for print release. For full description of PaperCut hold/release queues and release stations, please read the PaperCut manual.

Skip this scenario if hold/release queues will not be used at your site.

To perform print release testing a hold/release queue must be enabled:

1. In PaperCut, select the "Printers" tab.

2. Select the print queue for the Kyocera device that will be used for testing.

3. Enable the "Hold/release queue" option.
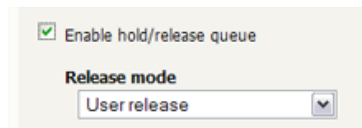
4. Press OK/Apply to save the changes. All printing to this queue will now be held until released by a user.

Make sure the copier is enabled for print release:

1. In PaperCut, select the "Devices" tab.

2. Select the Kyocera device.

3. Under "Device function", tick "Enable print release".

4. Select the print queue that was enabled for hold/release above. The Kyocera device will allow jobs on the selected queues to be released.
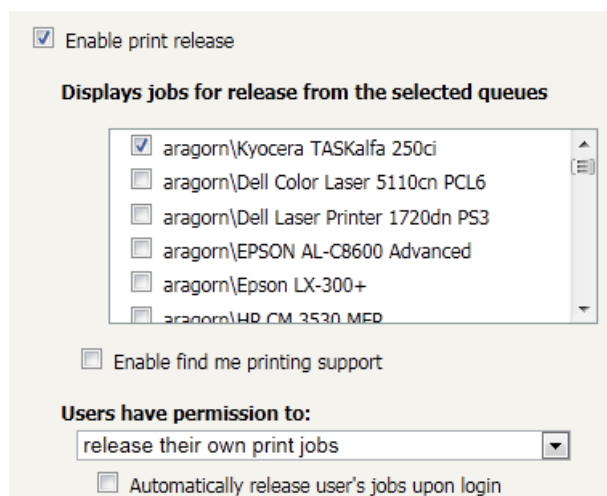
5. Press "OK" to save.

6. Log into a computer workstation as 'testusersimple'.

7. Print a few jobs to the print queue that was configured above. The jobs will be held in the hold/release queue.

8. Confirm that the jobs are held, by checking that the jobs are listed in the "Printers -> Jobs Pending Release" page of the PaperCut administration interface.

9. Confirm that the username is 'testusersimple'.

At the device:

5. Log in with the 'testusersimple' username and corresponding password as in scenario 1.

6. A list of print jobs will show.
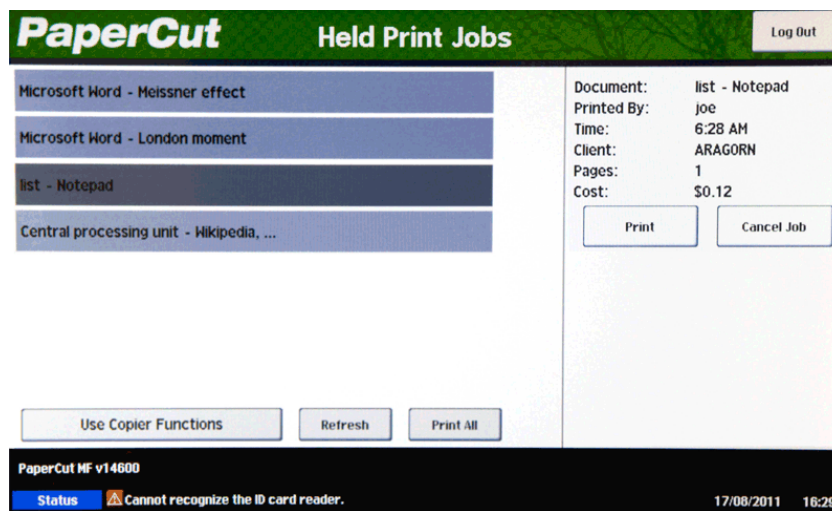
7. As you select different print jobs, the details window on the right will reflect the details of the currently selected job.

8. Now select a job and press the "Print" button in the right part of the screen. The print job will be queued for printing and a confirmation screen will show briefly.

9. To cancel a print job, select the print job and press the "Cancel Job" button in the right part of the screen.

10. Remember to sign out using the "Log Out" button.

4.5 Scenario 4: Scanning and faxing

Kyocera devices can also scan documents and send them by email or to a network folder. If a phone line is attached, they can send faxes. You can enable the tracking of scans and faxes. Users can be prevented from scanning or faxing when they are out of credit.

To enable tracking of scans and/or faxes:

1. In PaperCut, select the "Devices" tab.
2. Select the MFD device.

3. Under "Device function" tick "Track & control scanning" (or "Track & control faxing").

4. Select the charging type "advanced" set some numbers for page costs and thresholds. The cost after the threshold should be lower than the standard cost as it represents a volume discount. As an example, the screen shot below shows that the first page of a scan is charged at $0.10 and any subsequent page at $0.05.

At the photocopier:

1. Log in using username and password as 'testusersimple'.
2. Press the "Send" or "Send/FAX" button on the panel.
3. Press "Enter E-mail Addr", enter an email address, place some sheets in the document feeder and press the green button.
4. The device will proceed to scan and send an email with an attached PDF file to the email address.
5. Press the "Log Out" button to log out as before.

In the PaperCut administration interface verify that the scan was recorded and the user's account was deducted. This can be done as follows:

1. Log in to the PaperCut administration interface.

2. Select the device from the "Devices" tab.

3. Select the "Job Log" tab. This will list all copying, scanning and faxing activity on the copier. The job just performed as the test user should be listed. Verify the details of the job that was just performed.

Usage Date ▼	User	Charged To	Pages	Cost	Document Name	Attrib
Dec 9, 2009 11:44:35 AM	testusersimple	testusersimple	5	$0.30	[scanning]	

5 Configuration

After completing installation and registering the device with PaperCut, it will have been configured with reasonable default settings that are suitable for most environments. This section covers how to change the default settings. All the following settings are available via the device's 'Summary' tab in the PaperCut administration interface.

5.1 Device function

The device function setting defines which functions will be available on the device and how it will be used. Not all function settings are supported on all devices.

Each device function is discussed in the following table.

Device Function	Description
Track & control copying	The device will track walk-up off-the-glass copying.
Track & control scanning	The device will track scanning such as scan-to-email or scan-to-file.
Track & control faxing	The device will track the sending of faxes.
Enable release station	The device will act as a print release station.

5.2 Authentication methods

PaperCut supports a number of different ways to authenticate users who walk-up to the devices to perform copying. The default authentication method is username and password authentication.

The available authentication methods can be modified in the 'External Device Settings -> Authentication methods' section.

Authentication methods available for a device

Not all authentication methods are supported on all devices. A grayed-out option indicates that the option is not supported on this device.

Each authentication method is discussed in the following table.

Authentication Method	Description
Username and password	The user may use their domain/network username and password to log into the device.
Identity number	The user may log in with their identity number. Identity numbers are convenient when usernames are long or cumbersome to enter. For example, rather than entering a username like 'john.smith.001', it may be more convenient to enter an employee ID of '1234'. See the PaperCut user manual for information about user identity numbers, including importing identity numbers from an external source.
Identity number -> Require PIN	When a user logs in with their identity number, they must also provide their associated PIN. This provides additional security for identity number logins.
Swipe card	The user may log in by swiping a card (e.g. magnetic stripe, smart card, RFID). See the PaperCut user manual for information about user card numbers, including importing card numbers from an external source. See section 9 for a list of supported card readers.
Swipe card -> Require PIN	When a user logs in by swiping a card, they must also provide their associated PIN. This provides additional security for swipe card logins.
Swipe card -> Enable self-association with existing user accounts	Users can swipe cards previously not used or registered at the device with PaperCut and will be prompted for their username and password. The swipe card can then be used at subsequent logins. See section 6.2 for advanced configuration of this function.

Automatically login as user	Specifies that this device should always automatically log in as the given user. This option overrides all other authentication methods

5.3 Offline mode

Offline mode enables the device to continue being used when the PaperCut server is unavailable. See the PaperCut MF manual for details.

5.4 Usage of panel keys for ID number and PIN or card PIN

When logging in with an ID number, and optionally a PIN, the keys 0 – 9 on the device panel may be used in place of the on-screen keyboard provided ID number and PIN are numeric. Panel keys may be used for PIN entry after a card swipe, too. The corresponding fields are highlighted with a blue frame on the screen.

In addition, the panel keys 'C' and 'Enter' may be used:

- 'C' clears the field in case of a mistyped number.
- 'Enter' advances the highlight to the next field – in case of screens with more than one field on them such as the ID number + PIN login screen, or performs the log in equivalent to pressing the "Login" button on the screen after the last field on the screen has been entered or the screen only has one field.

5.5 Shared account selection

Shared account selection options at the MFD mirror the options presented in the PaperCut client print popup. The options available include:

- Select from a list of shared accounts
- Search for shared accounts by keyword
- Select account using PIN/Code

The options available to each user, as well as account security access, will mirror the same options available when the user prints. "Select from list" and/or "Select using PIN/Code" are controlled at the user level via the *User Details* page. The Security tab on each account controls account security /access.

5.6 Customizing text and messages

PaperCut allows some text that appears in the device to be customized. The custom text might include instructions or terminology that is more appropriate for the site. An example of text that is customizable is the "welcome text" that displays before the user logs in to the device.

The text can be customized by editing the device configuration from the PaperCut administration interface. For more details see section 6.

6 Advanced Configuration

6.1 Config Editor

The common configuration options for a device in PaperCut are available on the device's 'Summary' tab, and are discussed in more detail in section 5. This section covers the more advanced or less common configuration options which are available via the device's 'Advanced Config' tab in the device details screen.

Config name	Description
ext-device.inactivity-timeout-secs	Defines how long to allow a user to interact on a PaperCut screen between before they are automatically logged out. NOTE: Interactions on the device's native screens are governed by the device's native timeout mechanism. Default: 60
ext-device.kyocera-mita.message.welcome	Specify two lines of text to appear on top of the login screen in place of the default message. These can include instructions on which username and password are valid for the device. The value "DEFAULT" in this field will re-enable the default text.
ext-device.kyocera-mita.restricted.allow-busy-login	Setting this to "Y" will allow users to log in and charge jobs to a restricted account (user account or shared account) if any other job – charged to the same or another account – is still in progress. This may cause cost overruns with users going into negative balance.
ext-device-msg.card-association	Message to display when users are requested to associate their swipe card with an existing user account. See section 5.2 for details. Specify "DEFAULT" for the default text.
ext-device.self-association-allowed-card-regex	Specify a regular expression that limits which card numbers are accepted for associating swipe cards with user accounts. See section 5.2 for details. Please contact PaperCut support for help with regular expressions. Defaults to ".*" (dot-star) which includes all card numbers.

ext-device.card-self-association.use-secondary-card-number	Select whether user self-association should occupy the primary or secondary card number. It overrides the global setting unless the keyword "GLOBAL" is specified. This is useful when there is a mix of different non-configurable card readers that read different numbers from an ID card.
	Set to "Y" to use the secondary card number, "N" to use the primary card number. Default: "GLOBAL" to defer to the global configuration option.
ext-device-kyocera-mita.login.device-admin-users	Specify which users are given device admin rights when logged in. Device admin rights allow editing the address book and other advanced functions available in the System Menu. As device admin rights offer full device access, including the ability to deactivate the PaperCut application, only trusted users should be given device admin rights.
	Specify "NONE" for no users to receive device admin rights (default).
	Or specify a list of comma separated user names identifying the users to receive device admin rights.
	Or specify "*" to give device admin rights to all users.
ext-device.kyocera-mita.login.show-release	Change this to 'N' to skip the print release screen during the login process even with print release enabled. The print release screen will then only be accessible by choosing PaperCut from the devices' application menu. See section 6.4 for recommended settings for this workflow.
ext-device.kyocera-mita.release.list-format	Change this to change the displayed list of print jobs pending release to include details in addition to or in place of the document name. Use the following place holders for document details: %document% - document name, %user% - username, %pages% - no. of pages, %time% - time of printing, %cost% - cost of print job, %client% - machine the print job was sent from. Example: "%user% - %document%" would show jobs in the form "jsmith – Tax Form.pdf".
ext-device.kyocera-mita.release.show-cost	Set to 'N' to remove the cost display from the print release details screen. Suitable for "release only" or "silent tracking" environments.
ext-device.kyocera-mita.release.show-busy	Set to 'Y' to show a warning message when users are releasing documents while the device is still busy printing or copying.
ext-device.kyocera-mita.release.show-busy.job-timeout	When above option is enabled then jobs that have been paused (paper jam, out of paper) for this time are considered not to be keeping the printer busy.

ext-device-msg.busy-on-release	Message to display when above option is enabled. Specify "DEFAULT" for the default text.
ext-device.card-no-regex	See section 6.3.2.
ext-device.kyocera-mita.email.personalized-sender	Setting this to "Y" will take the user's email address as stored in the user's PaperCut profile and use it as the "From"/"Sender" address when scanning to email. (Note: ECOSYS/FS series devices may need a firmware upgrade)
ext-device.kyocera-mita.header.color	See section 6.2.2.
ext-device.kyocera-mita.header.textcolor	See section 6.2.2.
ext-device.kyocera-mita.restricted.allow-multiple-txn	Setting this to "Y" will allow users to charge jobs to a restricted account (user account or shared account) if another job charged to the same account is still in progress. This may cause cost overruns with users going into negative balance.
ext-device.kyocera-mita.extra-app-button.label	TASKalfa devices only. If set to a value other than "NONE" will display a second button with this label underneath "Use Copier Functions" on the print release screen. Pressing this button will enable access to the device functions and show a specific device function, defined by ext-device.kyocera-mita.extra-app-button.target (see below). Example: "Use Scanner"
ext-device.kyocera-mita.extra-app-button.target	TASKalfa devices only. Device function to show when pressing the button labeled using "ext-device.kyocera-mita.extra-app-button.label", see above. Options are: APPLICATION, COPY, CUSTOM_BOX, FAX_BOX, JOB_BOX, PROGRAM, REMOVABLE_MEMORY_BOX, SEND, STATUS, UD_COPY and UD_SEND.
ext-device.kyocera-mita.timezone.use-server	Setting this to "Y" will make the embedded app use the timezone of the server for displaying job creation times in the PaperCut print release job list. This overcomes some shortcomings with respect to daylight savings that have been observed in Kyocera devices.

6.2 Look and feel of the user interface

6.2.1 Customized logos

The embedded application header has a header logo. This logo can be replaced with your organization's logo.

The image must be saved as PNG files with the filename "`logo.png`" and should be 55 pixels high and not more than 300 pixels wide, and less than 50 kB in file size.

This image should be saved on the PaperCut application server in the PaperCut application directory under the subdirectory `server\custom\web\device\kyocera-mita`. Create the subdirectory if necessary. The embedded application will fetch the image from the server to display it on the device screen.

Verify the correct layout on the device screen after producing the image.

6.2.2 Custom header color

The header colors are defined in the Advanced Config in the devices details screen, see section 6.1. The options to change are:

- ext-device.kyocera-mita.header.color – the background color (type DEFAULT for the default setting of dark green)
- ext-device.kyocera-mita.header.textcolor – the text color (type DEFAULT for the default setting of white)

The colors are specified using the hexadecimal web/HTML notation (#RRGGBB) where "RR" is the red component, "GG" is the green component and "BB" is the blue component.

6.3 Configuring swipe card readers

Swipe cards contain numbers used to identify users according to the card number configured in the User Details screen under "Card/Identity" number. Some readers report information in addition to the number encoded on the card, such as checksums. PaperCut can treat these cases in three ways:

6.3.1 No conversion required

- A typical case is the checksum being reported after the card number, separated by an equals sign, such as in `5235092385=8`. PaperCut can handle this case by default; it will extract the number before the equal sign as the card number: `5235092385`.

6.3.2 Regular expression filter

- For some cases, a "regular expression" *may* be required that will filter the card number from the complete string of characters reported by the card reader. Documentation on regular expressions can be found on the Internet, e.g. at www.regular-expressions.info.
  - The regular expression must be fashioned so that the card number is returned as the first match group.
  - Usually one regular expression will be used for all the devices managed by PaperCut; this must be entered in the "Config editor (advanced)" which you will find on the Options tab under Actions. The key is called "ext-device.card-no-regex".
  - The global setting however can be overridden on a per-device basis: The key "ext-device.card-no-regex" can also be found on the Advanced Config tab in the device details screen. This setting will override the global setting unless the keyword "GLOBAL" is specified.

- o PaperCut developers will gladly assist in producing a regular expression when supplied with a few sample outputs from your card reader. Please contact PaperCut support.
- o If you would like to write your own regular expressions, here are some examples:
  - Use the first 10 characters (any character): `(.{10})`
  - Use the first 19 digits: `(\d{19})`
  - Extract the digits from between the two "=" characters in "123453=292929=1221": `\d*=(\d*)=\d*`

6.3.3 Format conversion

In addition to extracting parts of the card numbers using regular expressions, converting numbers from one format to another is a common requirement. For example a card reader may report in hexadecimal format, while the number stored in the source (e.g. Active Directory) is in a decimal format. PaperCut includes a number of inbuilt converters to assist here.

Note: Many card readers are configurable - the number format can be changed at the hardware level via utility or configuration tools. PaperCut's software-level converters are there to support card readers that don't offer this level of configuration, or where a global software-level conversion is a better choice. For example it may be quicker to do the conversion in PaperCut rather than manually reprogram 100+ readers!

Like regexes, the convertors may be defined on either a global (all devices) or on a per-device basis.

To set globally:

- Options -> Actions -> Config Editor
- Search for "ext-device.card-no-converter"
- Enter the name of the required converter (see table below) and click **Update**

To set at the device level:

- Devices -> [select device] -> Advanced Config Editor
- Search for "ext-device.card-no-converter"
- Enter the name of the required converter (see table below) and click **Update**

6.3.3.1 Standard Converters

The following table lists the converters available.

Convertor	Description
`hex2dec`	Convert a hexadecimal (base 16) encoded card number to decimal format. Hexadecimal numbers usually contain 0-9 and A-F. This will convert "`946EBD28`" to "`2490285352`".
`dec2hex`	Convert a decimal encoded card number to hexadecimal format. This will convert "`2490285352`" to "`946EBD28`".

`ascii-enc`	Unpack an ASCII encoded card number string. E.g. given the number "3934364542443238", the ASCII code "39" is converted to 9, "34" -> 4, "45" -> E, with the entire number resulting in "946EBD28".
`javascript:<path>`	Advanced: Define a custom conversion function in JavaScript (see below)

It is possible to chain or pipeline converters by delimiting with a pipe (|). For example, `ascii-enc|hex2dec` will first unpack the encoded ASCII number then convert it to a decimal.

Tip: Not sure which converter to use? Often trial and error is a good approach. After presenting a card, the number will appear in an application logger message with conversions applied (assuming the card is unknown to the system). Try different converters and inspect the resulting numbers in the application log.

6.3.3.2 Using custom JavaScript

If the inbuilt converter functions are unable to meet the requirements, it is possible to define your own function using JavaScript. This is an advanced exercise and it is expected that any implementer be familiar with programming and JavaScript. To implement your own converter:

1. Create a file text file `[install-path]/server/custom/card.js`
2. Define a single JavaScript function in this file called "convert" It should accept and return a single string. Here is a trivial example:
   ```
   function convert(cardNumber) {
       return cardNumber.substring(3,10).toLowerCase();
   }
   ```
3. Enter a converter in the form: `javascript:custom/card.js`

Tip: Check the file `[install-path]/server/log/server.log` when testing. Any scripting errors will be displayed as warning messages in the log.

Tip: A JavaScript script may also be included in the pipeline. For example `ascii-enc|hex2dec|javascript:custom/card.js`

6.3.3.3 Advanced notes

- If *both* a regular expression and a converter are defined, the regular expression is applied first. This means a regular expression can be used to clean up the input (e.g. remove checksum or delimiters) before passing to a converter.
- In some special situations a custom JavaScript implementation may not be enough. For example there may be a requirement to use a 3rd party system to decrypt the number. PaperCut includes an advanced plugin architecture that the PaperCut Software development team uses to implement these advanced converters. Please contact support to discuss development options and costs.

6.4 Release-only expedited workflow

In environments where all or most users do not use account selection (for instance in larger corporate environments where PaperCut is used purely for monitoring purposes), the following settings result in an expedited workflow that requires fewer key presses to access all essential functions:

- In PaperCut, on the device's details page, untick "Show account confirmation".
- In PaperCut, in the device's config editor, set "ext-device.kyocera-mita.login.show-release" to 'N'.
- On the device itself, in the System Menu, select Common, select "Default Application" and choose PaperCut as default application.

This will result in the following workflow:

- User logs in.
- Device displays print release.
- User can directly switch to Copy/Send/Fax/Document Box functions by pressing the corresponding button on the left of the panel.
- User goes back to print release by pressing the Application button on the panel.
- User logs out using the Logout button.

Users that do have account selection enabled for them will see an additional account selection step on login that will display even when they only log in to release prints. For this reason the above configuration is only recommended in "release only" or "silent tracking" scenarios where users' activity is automatically logged to their personal or a shared account.

6.5 Strict zero-stop copying

When a device has been configured for standard zero-stop copying, it is possible for a restricted user's copy job to not be halted immediately upon their balance reaching a value that is less than the cost of the next page. Due to the pipelined processing of pages, a job can continue for a number of pages that is dependent on the speed of the copier, resulting in a negative balance for the user.

To provide further control in this scenario, additional limit checking functionality can be enabled via the device's Config Editor in the PaperCut administration interface. The configuration option labeled "ext-device.kyocera-mita.limit.strict" will need to be set to "Y" to activate this option. Please see section 5.1 for more details regarding how to change a configuration option in the Config Editor.

This option will set PaperCut to estimate the cost of a print job, and decide ahead of time whether the user should be allowed to copy the job based on their current balance. This estimation is based on configurable assumptions regarding paper size, color/grayscale status and simplex/duplex status, irrespective of these actual attributes for the copy job. The following configuration options control these assumptions:

- ext-device.kyocera-mita.limit-reference.paper-size
- ext-device.kyocera-mita.limit-reference.grayscale
- ext-device.kyocera-mita.limit-reference.duplex

The precise values that these are configured to is dependent on the priorities of the organization, however included below are two example configurations that may be useful to work from.

6.5.1.1 "Balanced" configuration

- ext-device.kyocera-mita.limit-reference.paper-size = A3
- ext-device.kyocera-mita.limit-reference.grayscale = N
- ext-device.kyocera-mita.limit-reference.duplex = N

When configured as above for a copier's most costly values, PaperCut will generate a generous cost estimate. The result is the chance of a cost over-run and negative balance for the user becomes nil, however you may also encounter circumstances where copy jobs with cheaper attributes, such as a grayscale, duplex copy on A5, are stopped a number of pages before the user's balance would have been depleted.

6.5.1.2 "Aggressive" configuration

- ext-device.kyocera-mita.limit-reference.paper-size = A4
- ext-device.kyocera-mita.limit-reference.grayscale = Y
- ext-device.kyocera-mita.limit-reference.duplex = Y

Under this configuration, copy jobs with more costly options may not halt before the user's balance becomes negative. Even so, the standard zero-stop limit will apply once the job hits those bounds as this functionality is in addition to, rather than replacing, the standard zero-stop checks.

7 Known limitations and security

Kyocera devices have some limitations that have an impact on functionality and security.

7.1 Zero stop when copying

See section 6.1 about shortcomings of zero-stop when copying and configuration options to alleviate these shortcomings.

7.2 Job restrictions on restricted accounts

Users are prevented from logging in with a restricted account (user account or shared account) if another job charged to the same account is still in progress. Jobs in progress can be viewed using the "Status/Job cancel" button on the device panel. Once the previous job has finished, users can log in again and charge to the restricted account. This behavior can be overridden using a configuration key, please see section 6.1.

8 Troubleshooting and frequently asked questions

What is the IP address of my PaperCut Server?

Use operating system command-line tools such as ipconfig or ifconfig to determine this.

I have thousands of accounts representing my clients. Will the system handle this?

Yes. We have designed the system to handle thousands of Shared Accounts. Users with many accounts will also be presented with some "power options" to help them find accounts including keywords based search.

I've just moved from "Job Accounting" inbuilt to the copier and I'm having issues.

Leaving "Job Accounting" active on the copier can cause print jobs to go missing, prevent logins and conflict with tracking of jobs. Double-check that that the functionality has been turned off on the copier.

9 Appendix: Supported authentication card readers

The PaperCut embedded solution for Kyocera devices currently supports the following card reader manufacturers:

- RF IDeas (USB), tested using RDR-6081AKU and MS3-00M1AKU but may support others
- Elatec (USB), tested using TWN3 Mifare USB but may support others
- SCM (USB), tested using SCL010 and SCL011

NOTE: The Kyocera Card Authentication Kit is required – this is an optional component that will have to be purchased separately.

Other keyboard emulating USB card readers may work, but should be tested prior to deployment. Please contact your Kyocera dealer for assistance.

Supporting card reader authentication is as easy as:

1. Connecting a supported card reader to the device via the USB port (Note: On some devices this is hidden under a sticker on the side panel).
2. Enabling *Swipe card* as an *Authentication method* under the device's configuration in PaperCut's web interface.
3. Ensure the card number, as read by the reader, is loaded into the Card Number field in the PaperCut database (or consider using user self-association).