

# PaperCut Ricoh Embedded Manual

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# 1 Overview

This manual provides an overview of the installation, configuration and operation of PaperCut's embedded software MFD (Multi-Function Device) solutions for Ricoh. 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 smarter – they have touch screens and offer the ability to run applications directly on the device. The goal of PaperCut's embedded MFD solution is to leverage these smart devices and to provide walk-up MFD users with the same set of rich application features provided in the print control area. These include:

- Secure access to MFD functions
- End-user authentication including integration with single sign-on environments
- Monitoring and control of photocopying (quotas, charging, allocation and logging)
- Allocation of copying to accounts/departments/cost-centers/projects (shared accounts)
- Ability to locate shared accounts via select-from-list, keyword search or manual code/pin entry
- Release jobs from a hold/release queue (Secure & Find Me Printing)
- Tracking of scanning and faxing (for MFDs supporting SDK 4 or later)

Highlights of the embedded solution include: consistency, integration, rate of development, vendor neutrality and security.

## 1.1 Consistency

The embedded solutions are developed in-house by the PaperCut Software development team. This ensures that the copier interface is consistent with the workstation print interface, meaning users only have to learn one system.

## 1.2 Integration

PaperCut is a single integrated solution where print and copier control are both 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 versions 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 operating systems including Windows, Linux and Mac.

## 1.5 Security

A large percentage of PaperCut's user base is in education environments where security is important. All embedded solutions are developed with security in mind. Where security objectives can't be satisfied, any known deficiencies are fully disclosed.

## 2 Installation

This section covers the installation of the PaperCut embedded application for compatible Ricoh MFDs. The embedded application will allow the control, logging and monitoring of walk-up off-the-glass copy, scan and fax usage and may serve as a release station for network prints (for information on just tracking network printing see the [PaperCut MF manual](#)).

### 2.1 Requirements

Ensure that the following points are checked off before getting started:

- PaperCut is installed and running on your network. Please see the Installation chapter of the [PaperCut MF manual](#) for assistance.
- Ensure you know which version of the Ricoh Embedded Software Architecture (ESA) Software Development Kit (SDK) your MFD supports and that it supports SDK version 2 or later (see section 2.1.1). Installation instructions may vary slightly for different SDK versions.
- Ensure that the Java VM card is installed.  
**NOTE:** This must be purchased and installed by a Ricoh technician.
- Ensure that the MFD has a hard disk drive (HDD) installed. HDDs are not automatically included with some of the smaller MFDs.
- For MFDs with SDK version 4 or later, some system parameters must be configured (see section 2.2.6).  
**NOTE:** These settings can only be changed by a Ricoh Technician. We recommend getting them changed when the Java VM card is installed.
- For MFDs with SDK versions earlier than version 10, verify that the **Other Function** key is installed on the left of the Ricoh LCD screen, below the **Copy/Facsimile** keys (see Figure 1). This key will activate the PaperCut embedded application and is usually installed by a Ricoh technician when the Java VM card is installed.



Figure 1: The Other Function key on an MFD with SDK 7.

MFDs with SDK version 10 or later do not have an **Other Function** key. Instead, the PaperCut application may be accessed via the **Home** key (see Figure 2).



Figure 2: The Home key on an MFD with SDK 10.

- Ensure you know whether or not the MFD has a Smart Operations Panel. These panels do not have function keys or a **User Tools/Counter** key. Instead, these functions are accessed from the Home screen (see Figure 3).



Figure 3: The Home screen on an MFD with a Smart Operations Panel.

- Have available the network name and IP address of the PaperCut server.
- Ensure that the MFD is connected to the network.
- Have available the network address of the MFD. It is recommended that the MFD is configured with a static IP.

Please check the supported model lists below to determine which ESA SDK version your MFD supports. You can also check the SDK version as discussed in section 2.1.2.

### 2.1.1 Supported models

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 the 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 of your network setup.

#### 2.1.1.1 MFDs with SDK 10/11/12

- MP 301/2553/3053/3353/4002/5002/6002/7502/9002
- MP 2001SP/2501SP
- MP 2554/3054/3554/4054/5054/6054
- MP C305/C3002/C3502/C4502/C5502
- MP C401/C401SR
- MP C2003SP/C2503SP
- MP C3003/C3503/C4503/C5503/C6003
- MP C6502SP/C8002SP
- MP CW2200
- Pro 8100S/8110S/8120S
- Pro C5100S/C5110S

#### 2.1.1.2 MFDs with SDK 4/5/7

- MP C6000/C6501/C7500/C7501
- MP C2800/C3300/C3001/C3501/C5041
- MP C4000/C4501/C5000/C5501
- MP C2050/C2051/C2551/C7140
- MP C300/C400
- MP 6001/7001/8001/9001
- MP 4000/4001/5000/5001
- MP 2532/2550/2851/2852/3350/3351/3352
- Pro 1356EX
- other models supporting SDK 4/5/7 that have LCD touchscreens

**NOTE:** Models without touchscreen interfaces are not supported, i.e. MFDs with SDK 6.

#### 2.1.1.3 MFDs with SDK 2

**IMPORTANT:**

MFDs with SDK 2 have reached the end of support life.  
See <http://www.papercut.com/kb/Main/EndOfLifePolicy>

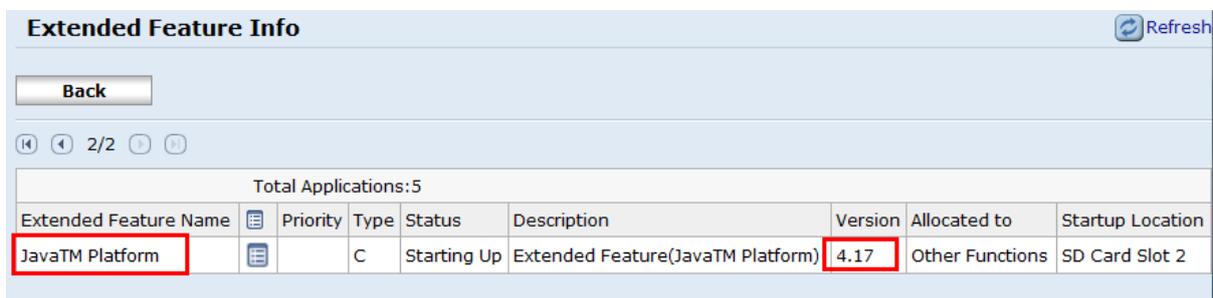
- Aficio MP C2500SP/C3000SP
- Aficio MP C3500/C3500SP/C4500/C4500SP
- Aficio MP C1500SP/C1500SPF/615C
- Aficio MP 5500/5500SP/6500/6500SP/7500/7500SP
- Aficio MP 9000/1100/1350
- Aficio MP 6000/7000/8000

- other models supporting SDK 2 that have LCD touchscreens

### 2.1.2 Determining the SDK version

If your MFD has the Java VM card installed, it is easy to determine the version of the SDK. Use Ricoh Web Image Monitor as follows:

1. On a computer, open a web browser.
2. Enter the URL of the MFD, e.g. `http://ricoh-device-ip/`.
3. Select **Device Management** → **Configuration**.
4. Under **Extended Feature Settings**, select **Extended Feature Info**.
5. Find the entry for **Java™ Platform** and check the number in the version column (see Figure 4).



Total Applications:5									
Extended Feature Name	Priority	Type	Status	Description	Version	Allocated to	Startup Location		
Java™ Platform		C	Starting Up	Extended Feature(Java™ Platform)	4.17	Other Functions	SD Card Slot 2		

Figure 4: An MFD with SDK 4.

This version number is the version of the ESA SDK, and is referred to throughout this document.

## 2.2 Setup procedure

This section describes installing PaperCut on Ricoh MFDs.

### 2.2.1 Verify administrator access to Ricoh Web Image Monitor

Ricoh MFDs have an embedded web server that provides an alternate administration interface. This interface is useful to remotely stop or uninstall the embedded application as required. To verify administrator access:

1. On a computer, open a web browser.
2. Enter the URL of the Ricoh MFD, e.g. `http://ricoh-device-ip/`.
3. At the top right of the page, click **Login**.
4. Enter the MFD administrator username and password (default is admin with no password), and click **Login**.
5. Select **Device Management** → **Configuration**.
6. Scroll down and confirm that the **Startup Setting** and **Uninstall** options under **Extended Feature Settings** are visible and accessible.

### 2.2.2 MFD security

To ensure the security of your system and prevent non-administrator users from modifying settings, configure a password for the MFD's administrator user. To do this:

1. Log in to Ricoh Web Image Monitor for the MFD as the administrator.

2. Go to **Device Management** → **Configuration** and then under **Device Settings** select **Program/Change Administrator**.
3. Turn on administrator authentication for all sensitive features, particularly the **User Administrator** and **Machine Administrator** settings. Set the password and click **OK** to save the changes. This should log you out and return to the login page.

### 2.2.3 Configure networking/firewall

Ensure that your networking/firewall configuration allows inbound connections from the MFD to the PaperCut server on port 9193.

### 2.2.4 Enable PaperCut external hardware integration

1. Log in to the PaperCut administration web interface (e.g. <http://papercut-server:9191/admin>) using a web browser.
2. Navigate to **Options** → **Advanced** and ensure the option **Enable external hardware integration** is selected.
3. Click **Apply**.

### 2.2.5 Choose the application version

PaperCut supports MFDs running SDK 4 or later as described in section 2.1.1. These MFDs should install application 403046912.

**IMPORTANT:** The PaperCut embedded application for Ricoh MFDs with SDK 2 has reached the end of support life. This application should not be installed for new customers or MFDs. It may only be reinstalled on MFDs that were already running this application. For instructions on installing on MFDs with SDK 2, please see section 11. The remainder of this section assumes you are installing on an MFD with SDK 4 or later.

### 2.2.6 Configure the Enhanced External Charge Unit

The Enhanced External Charge Unit allows PaperCut to control and track usage of the MFD. This must be enabled to allow PaperCut to function properly.

Set the system parameters as follows:

SP-5-113-001 (Default Optional Counter Type) → 0:None

SP-5-113-002 (External Option Counter Type) → 1:Expansion Device 1

The MFD may need to be restarted for these changes to take effect.

**NOTE:** This setting can only be enabled by a Ricoh technician. We recommend that this setting be changed when the Java VM card is installed. Please contact your copier dealer/technician to arrange this.

#### 2.2.6.1 Ensure MFD authentication and key counter are disabled

For PaperCut to work properly, the built-in authentication (e.g. user codes) should be disabled as follows:

1. At the MFD, select **User Tools** → **System Settings**.
2. Select the **Administrator Tools** tab.

3. Press the **User Authentication Management** button (usually on the second page of options).
4. Disable authentication by selecting the **Off** button.

The key counter can also interfere with PaperCut, so ensure that is also disabled:

1. Select **User Tools** → **System Settings**.
2. Select the **Administrator Tools** tab.
3. Select the **Key Counter Management** button (usually on the second page of options).
4. Make sure all the options are **NOT** enabled (i.e. not highlighted).

### 2.2.6.2 Enable Enhanced External Charge Unit support

Once the system parameter has been enabled, the Enhanced External Charge Unit on the MFD must be enabled. This determines which MFD functions are controlled and tracked by PaperCut:

1. At the MFD, select **User Tools** → **System Settings**.
2. Select the **Administrator Tools** tab.
3. Select the **Enhanced External Charge Unit Management** button. It is usually on the bottom left or top right of the second page (see Figure 5), although location may vary slightly between MFDs. If this button is disabled see section 2.2.6.

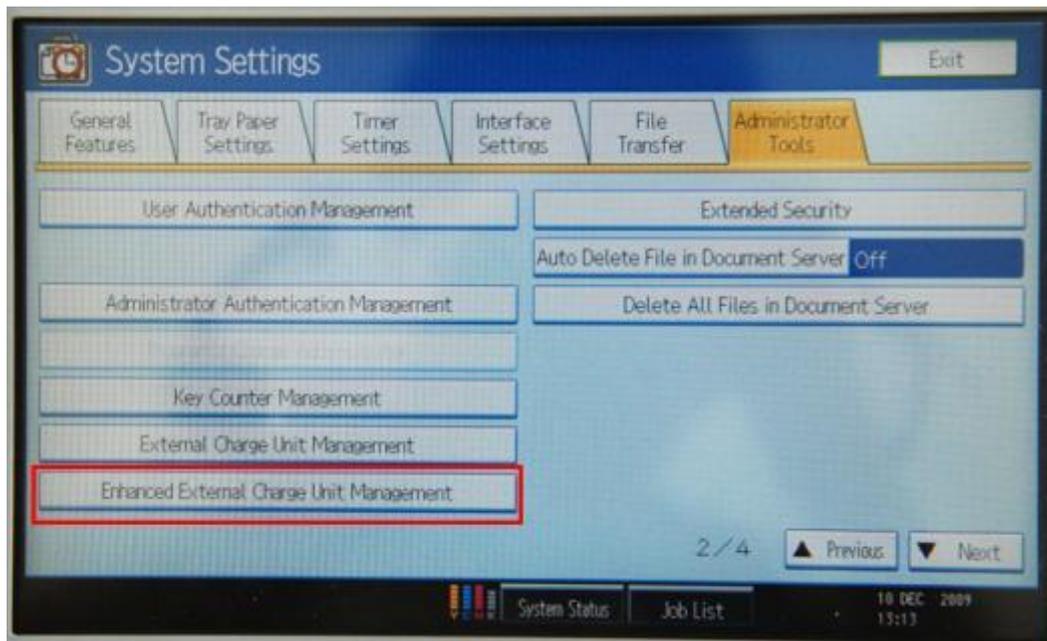


Figure 5: Accessing Enhanced External Charge Unit Management.

4. Enable all of the **Copy** options, i.e. **Full Color**, **Black & White**, **Two-color** and **Single Color**.
5. Enable the **Document Server** option. This is an alternate way to perform copying and should also be locked/tracked.
6. (Optional) To control/track faxing and scanning, also enable the **Facsimile** and **Scanner** options. You will need to do this if you enable **Track & control scanning** and **Track & control faxing** for this MFD in the PaperCut administration web interface (see section 5.1.3).

7. (Optional) Enable the **Browser** option if you are tracking Ricoh ICE Print Cloud print jobs (see section 6.7).
8. Press **OK** to save the changes.

**IMPORTANT:** Ensure that you do **NOT** enable the **Printer** options because this will cause network print jobs to be blocked by the MFD.

If in a strict control environment, consider disabling USB printing (see section 7.1.1).

To verify that the Enhanced External Charge Unit is enabled properly, exit out of the **System Settings**, and then select the **Copy** key. If working properly, the copier functions should be disabled and the screen should resemble Figure 6.

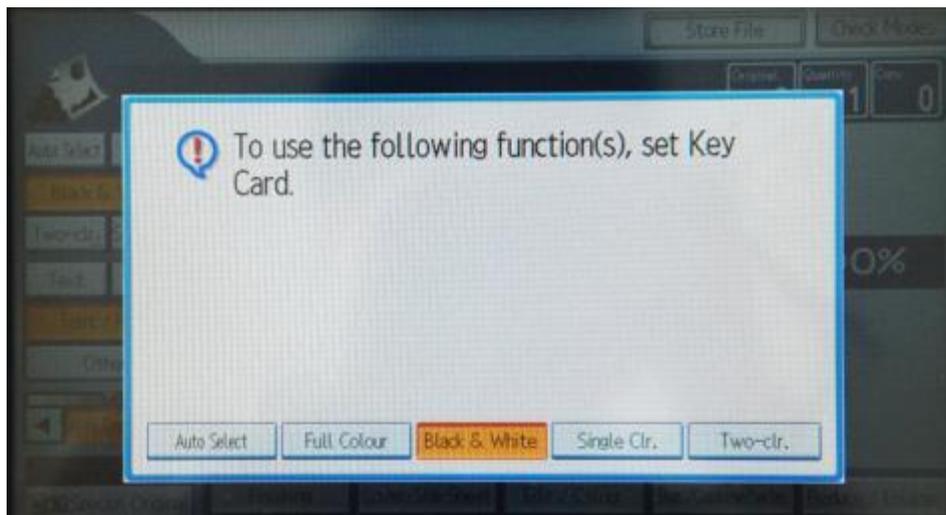


Figure 6: Disabled copier functions.

## 2.2.7 Set the heap size

We recommend setting the heap size to 75% of maximum. To do this:

1. Log in to Ricoh Web Image Monitor for the MFD and navigate to **Device Management** → **Configuration**.
2. Under **Extended Feature Settings**, select **Administrator Tools**.
3. Under **Heap / Stack Size Settings**, set **Heap Size** to 75% of the maximum value allowed (see Figure 7).

Heap / Stack Size Settings	
■ Heap Size	: 48 MB (16 - 64 MB)
■ Stack Size	: 256 KB (256 - 512 KB)
Memory Status	
System Memory	: 163,524,608 Free (Total: 578,596,864)
Heap	: 14,028,992 Free (Total: 16,580,608)

Figure 7: Setting the heap size.

## 2.2.8 Configure fax

To improve reliability when tracking faxes on Ricoh MFDs, it is recommended to change the fax transmission mode to “Immediate TX”. This changes the fax to only scan documents as they are sent.

To do this:

1. At the MFD, press the **Facsimile** key.
2. Press the **Immed. TX** button so that it is highlighted. This button appears towards the center-right of the **Facsimile** screen.
3. Press the **Program** key (above the numeric keypad).
4. Press the **Program as Defaults** button.
5. Press the **Program** button (on the screen).
6. Press **Yes** to confirm.

This sets the “Immediate TX” mode as the default transmission mode for all faxing (see section 7.1.4).

## 2.2.9 Install the application via Ricoh Web Image Monitor

Web installation provides a convenient way to install the embedded application. It can be done remotely on multiple MFDs using just a web browser. This is the simplest way to install the embedded application.

### 2.2.9.1 Prepare the application ZIP file

The first step is to create an application ZIP file to be uploaded to the MFD.

1. On the PaperCut server, open the directory that contains the embedded application:

```
<app-dir>\providers\hardware\ricoh\403046912
```

2. Use a ZIP tool to create a ZIP file containing all the files in the above directory. The name of the ZIP file is not important.
3. Copy the ZIP file to the location from where you will perform the installation (i.e. any workstation with network access to the MFD).

**NOTE:** It is possible to preconfigure the PaperCut server and MFD name settings using the `config.properties` file. This must be done prior to creating the ZIP file. See the file for details.

### 2.2.9.2 Install the application

To install the application, perform the following steps:

1. Log in to Ricoh Web Image Monitor for the MFD as the administrator.
2. Go to **Device Management** → **Configuration** and then under **Extended Feature Settings** select **Install**.
3. Select the **Local File** option, then click the **Choose File** button and select the embedded application ZIP file. Then click the **Display Extended Feature List** button (see Figure 8) to upload the file. This may take a minute or two.

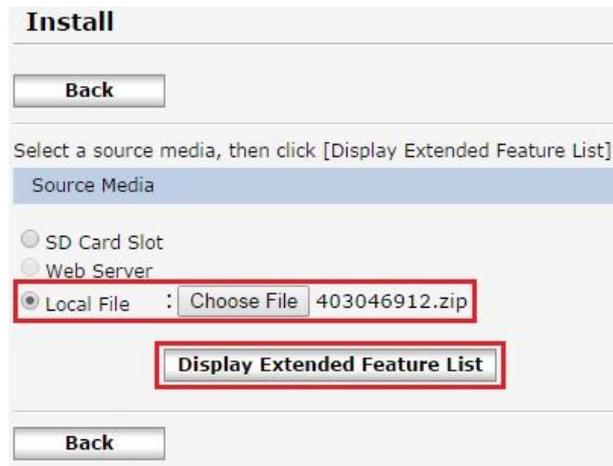


Figure 8: Uploading the application.

4. Change the install location to **Device HDD**, set **Auto Start** to **On** (but don't click **Install**), then select **PaperCut** in the table of applications (see Figure 9).

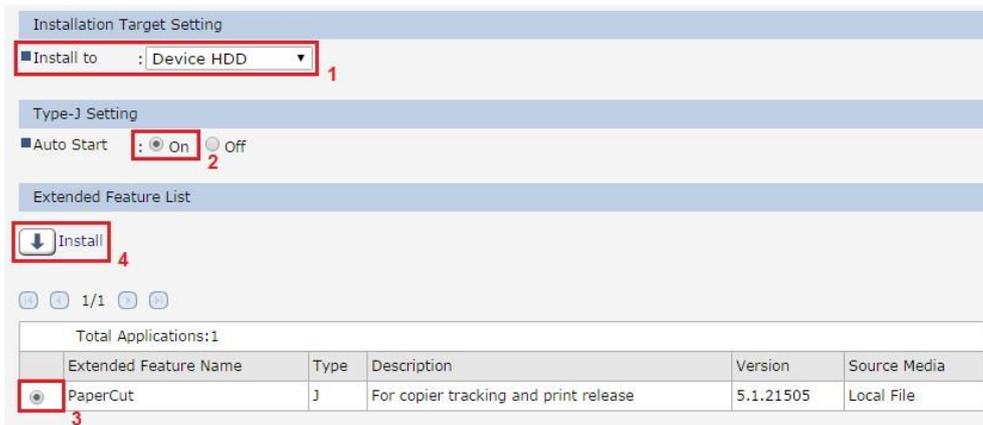


Figure 9: Installing the application.

5. Click **Install**.
6. A confirmation screen will appear. Verify the install options are correct and click **OK**.
7. The application will be installed. You can confirm by selecting **Startup Setting** under **Extended Feature Settings** on the **Configuration** page (see Figure 10).

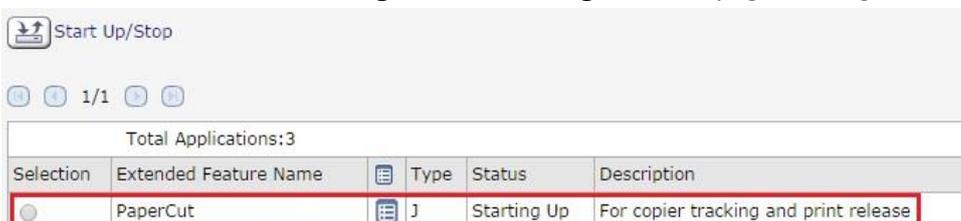


Figure 10: Confirming installation.

If the install settings are incorrect, the application may not work correctly and even may not uninstall. In this case, simply reinstall with the correct install settings.

## 2.2.10 Start the application

Once the application is installed and configured, it can be started via the **Startup Setting** in Ricoh Web Image Monitor (see section 2.2.9.2).

Alternatively, the embedded application can be started at the MFD itself:

1. Select **User Tools** → **Extended Feature Settings**.
2. On the **Extended Feature Settings** screen, select the **Startup Setting** tab.
3. The running applications are highlighted. To start the PaperCut application, press the **PaperCut** application button.
4. The MFD will display **Please wait** until the application starts.
5. Once started, exit the screens by pressing **Exit** twice.

Now that the application is started:

1. Activate the application:
  - On MFDs with SDK 10 or later, the application is located on the Home screen (press the **Home** key).
  - On MFDs with earlier SDK versions, press the **Other Function** key (which is below the **Copy/Facsimile** keys on the left).
2. The first time the PaperCut application runs, it will prompt for configuration information (see Figure 11):
  - **Device Name** is the unique name for the MFD as it will be registered in PaperCut.
  - **Server Hostname/IP** is the IP or network address of the PaperCut server.
  - **Port** is the port used to communicate with the PaperCut server. Do not change this from 9193.

Field	Value
Device Name	admin-copier
Server Hostname/IP	papercut-server
Port	9193

Figure 11: Configuration screen.

3. Press **Save** to save the new settings.

- The PaperCut application then attempts to connect to the PaperCut server. If it successfully connects, you will be presented with the **Welcome** screen (see Figure 12).

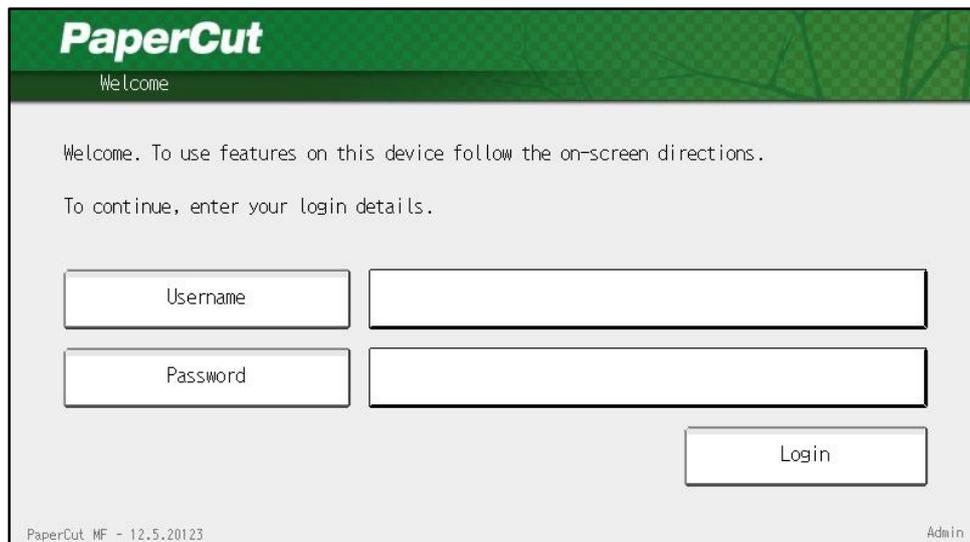
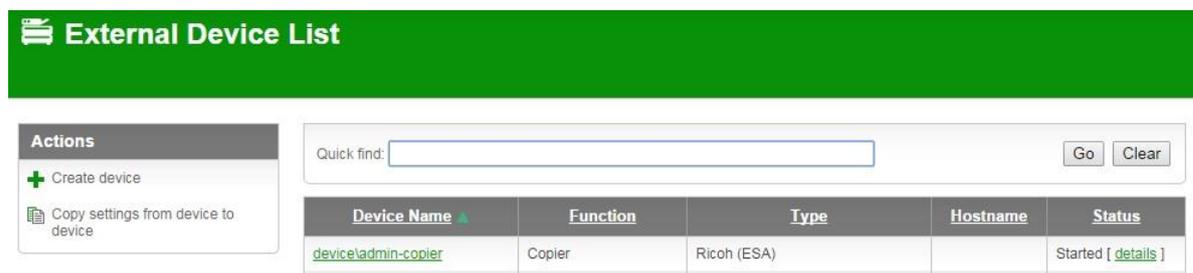


Figure 12: Welcome screen.

- The MFD will appear in the PaperCut administration web interface under the **Devices** tab (see Figure 13) with the name you provided in the steps above. It will be created using the cost settings of the [Template printer].



Device Name	Function	Type	Hostname	Status
deviceadmin-copier	Copier	Ricoh (ESA)		Started [details]

Figure 13: MFD appearing in the PaperCut administration web interface.

The embedded application is configured to “auto-start” which means that when the MFD is rebooted/restarted the PaperCut application will start automatically.

The embedded application is now successfully installed. To use the MFD, the users must log in to the application, and any copying they perform is logged in PaperCut.

### 2.2.11 Set the default application and system timeout

For the application to run effectively, it must be configured as the default application and the system reset timeout should be set. This ensures the application is displayed when the MFD is idle or the user is not logged in.

#### 2.2.11.1 Function Priority

The **Function Priority** determines the default application. For MFDs with a Smart Operations Panel:

- On the MFD, select **Screen Features** → **Screen Device Settings** → **Function Priority**.

2. Select **PaperCut**.

**NOTE:** The PaperCut application must be running for this option to be available.

For MFDs without a Smart Operations Panel:

1. On the MFD, select **User Tools** → **System Settings**.
2. On the **General Features** tab, select the **Function Priority** setting.
3. For MFDs with SDK 10 or later, select the **Extended** tab and select **PaperCut**, and press **OK** to save.
4. For MFDs with earlier SDK versions, select **JavaTM/X** and press **OK**.

### 2.2.11.2 System Auto Reset Timer

The **System Auto Reset Timer** determines how long the machine will wait (if left untouched) before switching back to the PaperCut application. If it is set too short, it will be annoying for users. If it is set too long and users forget to log out, other users could charge copies to the previous user's account. To set this:

1. On the MFD, select **User Tools** → **System Settings**.
2. Select the **Timer Settings** tab.
3. Select the **System Auto Reset Timer** option.
4. Enable the timer by pressing the **On** button and set the timeout to something reasonable (e.g. 30 to 60 seconds).

### 2.2.12 Additional network security (optional)

The MFD 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 **Security**.
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. Click **Apply**.
5. Test the devices to ensure they can continue to contact the PaperCut server.

## 2.3 Bypassing the system

It is important that administrators take care to prevent users from bypassing the system and directly accessing the MFD. Likewise, it's also important that administrators know how to bypass/disable the system if direct MFD access is required, i.e. to change advanced system settings. Administrators should take the following precautions:

- The MFD's built-in administrator password should be changed and always kept secure.

- The power and network cable should be securely connected. The system is designed to be robust and record MFD usage if power is lost during copying, but it is possible to start copying before the embedded application starts after restarting the MFD.

To uninstall the embedded application to allow for uncontrolled access to the MFD, see section 2.2.1.

## 3 Upgrading to a newer version

The procedure for upgrading an existing embedded application to a newer version is the same as the standard installation procedure described above. Installing the application over the top of the existing installation will upgrade the application and keep all your configuration settings.

After upgrading, it's worth quickly checking that 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 is 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 three test scenarios that are applicable for most organizations. Please complete all the test scenarios relevant to 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:

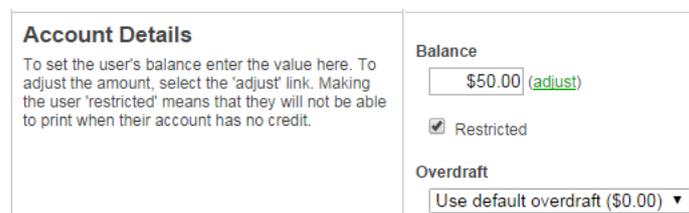
- `testusersimple`, to perform basic copier monitoring and control and to perform print release tests
- `testuseradvanced`, to perform copier monitoring and control with account selection enabled (i.e. to charge copying to accounts/departments/cost centers)

To set up these users in PaperCut:

1. Create the `testusersimple` and `testuseradvanced` users in your Active Directory or LDAP directory.
2. Log in to the PaperCut administration web interface.
3. Go to the **User/Group sync** tab of the **Options** page and click **Synchronize Now**.
4. Once synchronization is complete, the users will be added to PaperCut.

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

1. Select the **Users** page.
2. Select the `testusersimple` user.
3. Set the user's balance to \$50.00 and verify the account is set to **Restricted** (see Figure 14).



The screenshot shows the 'Account Details' section of the PaperCut administration interface. It includes a text box for setting the user's balance, a checkbox for 'Restricted' (which is checked), and a dropdown menu for 'Overdraft' set to 'Use default overdraft (\$0.00)'. A small note explains that 'restricted' means the user cannot print without credit.

<b>Account Details</b> To set the user's balance enter the value here. To adjust the amount, select the 'adjust' link. Making the user 'restricted' means that they will not be able to print when their account has no credit.	<b>Balance</b> \$50.00 (adjust)
	<input checked="" type="checkbox"/> Restricted
	<b>Overdraft</b> Use default overdraft (\$0.00) ▼

Figure 14: Restricted user

4. Verify that this user is set to **Automatically charge to personal account** in the **Account Selection** options.
5. Click **OK** to save.

To configure `testuseradvanced`:

1. Select the **Users** page.
2. Select the `testuseradvanced` user.

3. Change the **Print account selection** option to **Show the standard account selection popup** and enable the account selection options (see Figure 15).

**Account Selection**  
Account selection can be used to allow the user to select what account is charged, or even to confirm print jobs before they are sent to the printer. These options require running the user client tool on workstations.

**Print account selection**  
Show the standard account selection popup

**Information to show in popup**

- Allow user to charge to their personal account
- Allow user to select shared accounts (from list)
- Allow user to select shared accounts (using PIN/code)
- Allow user to perform printing as another user

Figure 15: Allowing the user to select an account.

4. Click **OK** 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 MFD:

1. On the **Welcome** screen, enter the `testusersimple` username and password and press **Login**.
2. If print release is also enabled, press the **Use Device Functions** button.
3. At this point, the MFD will be enabled for use. Follow the on-screen instructions (see Figure 16) and perform some test copying, i.e. press the **Copy** key and perform a copy as normal.

**PaperCut**  
Device Access Approved

The device is now enabled. Press one of the buttons on the left such as 'Copy' or 'Scanner' to begin.

User: testusersimple  
Account: Personal account  
Balance: \$50.00

Logout Back

OK

Figure 16: Account confirmation screen.

4. Once you have completed copying, press the **Home** key and then the **PaperCut** icon (or press the **Other Function** key) to return to the PaperCut application.
5. Press **Logout**.

Back in the PaperCut administration web interface, verify that the MFD activity was recorded and the user's account deducted.

1. In the PaperCut administration web interface, select the MFD from the **Devices** page.
2. Select the **Job Log** tab. This will list all recent copying activity on the MFD (see Figure 17). The copying just performed as the test user should be listed. Verify the details of the copy job that was just performed.

Date ▼	User	Charged To	Pages	Cost	Document Name	Attribs.	Status
Sep 12, 2014 1:59:35 PM	<a href="#">testusersimple</a>	<a href="#">testusersimple</a>	2 (Color: 0)	\$0.20	[copying]	A4 (ISO_A4) Duplex: No Grayscale: Yes	Printed <a href="#">[refund]</a> <a href="#">[edit]</a>

Figure 17: Device Job Log.

3. Click the user's name in the **User** column to view the user's account details.
4. Select the **Job Log** tab to display all print/copy activity for the user.
5. Select the **Transaction History** tab and verify that the cost of the copying was deducted from the user's account (see Figure 18).

Transaction Date ▼	Transacted By	Amount	Balance After	Transaction Type
Sep 12, 2014 1:59:35 PM	[system]	-\$0.20	\$49.80	<a href="#">Printer Usage</a>
Sep 12, 2014 1:53:17 PM	admin	\$50.00	\$50.00	Manual adjustment

Figure 18: User Transaction History.

### 4.3 Scenario 2: Copying with account selection

Copying can be allocated to shared accounts that represent departments, projects or cost centers. This is commonly used by staff in academic organizations to allocate printing to departments.

First, some test accounts should be created:

1. In the PaperCut administration web interface, select the **Accounts** page.
2. Select the **Create a new account...** action on the left.
3. Enter the account name **Test Account 1**.
4. Click **Apply**.
5. Select the **Security** tab and allow all users to access that account by adding the **[All Users]** group.
6. Press **OK**.
7. Repeat the process to create a few more accounts.

At the MFD:

1. On the **Welcome** screen, enter the **testuseradvanced** username and password and press **Login**.
2. The screen will display the account selection options (see Figure 19). Select the account to allocate copying to, e.g. **Test Account 1**.

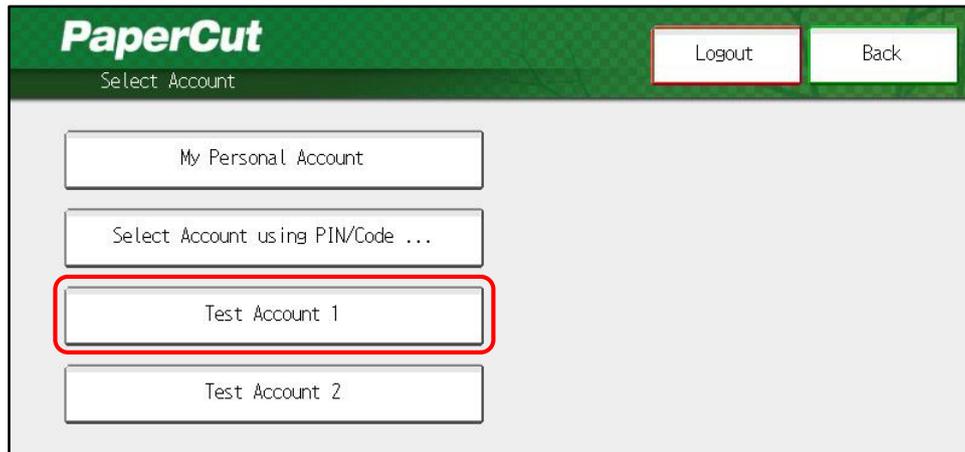


Figure 19: Selecting an account.

3. At this point, the MFD will be enabled for usage. Follow the on-screen instructions and perform some copying, i.e. press the **Copy** key and perform a copy as normal.
4. Once completed copying, press the **Home** key and then the **PaperCut** icon (or press the **Other Function** key) to return to the PaperCut application.
5. Press **Logout**.

Back in the PaperCut administration web interface, verify that the MFD activity was recorded and the user's account deducted.

1. In the PaperCut administration web interface, select the MFD from the **Devices** page.
2. Select the **Job Log** tab. This will list all recent copying activity on the MFD. The copying just performed as the test user should be listed.
3. Verify the details of the job, i.e. that the job was charged to the selected account.
4. Click on the account name in the **Charged To** column to view the account's details.
5. Selecting the **Job Log** tab will display all print/copy activity for the account, and will show the test copying that was performed.

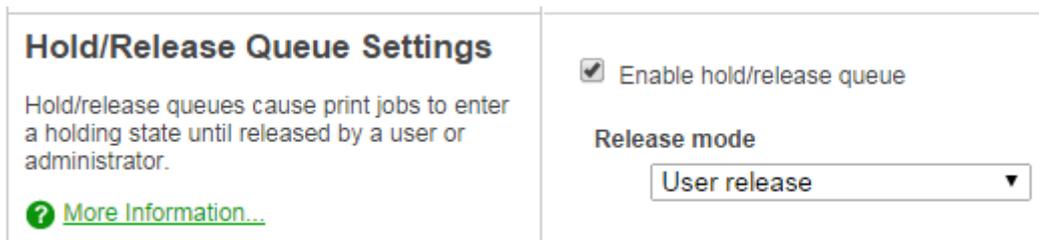
#### 4.4 Scenario 3: Print release

The embedded application may also be used for print release. For a full description of PaperCut hold/release queues and release stations, please see the Hold/Release Queues & Print Release Stations chapter of the [PaperCut MF 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 the PaperCut administration web interface, select the **Printers** page.
2. Select the print queue for the MFD that will be used for testing.
3. Select the **Enable hold/release queue** option (see Figure 20).



**Hold/Release Queue Settings**

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

[More Information...](#)

Enable hold/release queue

Release mode

User release

Figure 20: Enabling print release for the print queue.

4. Press **OK** save the changes. All printing to this queue will now be held until released by a user.

The MFD must also be enabled as a print release station:

1. In the PaperCut administration web interface, select the **Devices** page.
2. Select the MFD you will use.
3. Under **Device function**, select **Enable print release**.
4. Select the print queue that was enabled for hold/release above. The MFD will allow jobs on the selected queues to be released (see Figure 21).



Enable print release

Displays jobs for release from the selected queues

Find printer...

desktop\Ricoh Aficio MP C3000 PS

Show button to release all pending jobs

Figure 21: Enabling print release for the MFD.

5. Click **OK** to save.

At a computer workstation:

1. Log in as `testusersimple`.
2. Print a few jobs to the print queue that was configured above. The jobs will be held in the hold/release queue.
3. Confirm that the jobs are held, by checking in the PaperCut administration web interface that the jobs are listed in the **Jobs Pending Release** tab of the **Printers** page.
4. Confirm that the username is `testusersimple`.

At the MFD:

1. At the **Welcome** screen, enter the `testusersimple` username and password and press **Login**.
2. The list of held print jobs is displayed (see Figure 22). Select the job to release by pressing on the job.

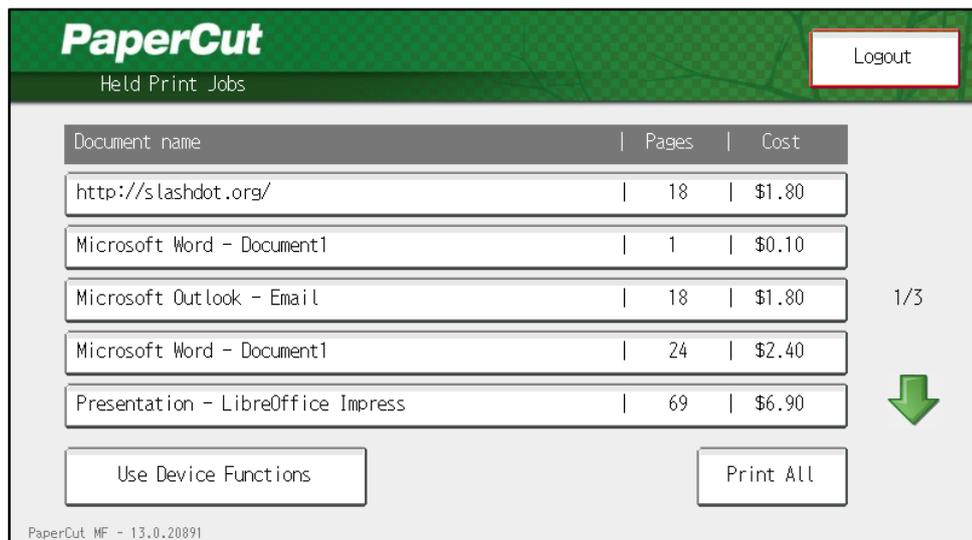


Figure 22: Print release screen.

3. Confirm the release of the print job by pressing the **Print** button. The job will then print.
4. Try cancelling a job by selecting it and then pressing the **Cancel Job** button. Verify that the job is cancelled, and is not printed.

## 5 Configuration

After completing installation and registering the MFD 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 in the PaperCut administration web interface.

### 5.1 Device details

The settings in this section are on the MFD's **Device Details** page which can be accessed by clicking on the MFD in **Devices** → **External Device List**. For information about settings in the **Advanced Config** tab, see section 6.1.

#### 5.1.1 Authentication methods

PaperCut supports a number of different ways to authenticate users who walk to the MFD to use it. These authentication methods are configured in the **Summary** tab and are documented in the Copier Integration chapter of the [PaperCut MF manual](#).

**NOTE:** Swipe card authentication is only available on MFDs with SDK 4 or later. See Appendix 9 for the list of supported card readers.

#### 5.1.2 Offline mode

MFDs with SDK 4 or later feature an offline mode that enables them to continue being used when the PaperCut server is unavailable. See the Copier Integration chapter of the [PaperCut MF manual](#) for details.

#### 5.1.3 Device function

The **Device function** settings in the **Summary** tab for the MFD (see Figure 23) define which functions will be available on the MFD and how the MFD will be used. Not all settings are supported on all MFDs.

Device function (e.g. copy, print release, etc)

Track & control copying

Page cost

(standard)

Track & control scanning

Charging type

simple ▼

Page cost

Track & control faxing

Enable print release

Figure 23: Device function settings.

Each function is discussed in the following table.

Function	Description
Track & control copying	The MFD will track walk-up off-the-glass copying.
Track & control scanning	The MFD will track scanning. (MFDs with SDK 4 or later.)
Track & control faxing	The MFD will track faxing. (MFDs with SDK 4 or later. See section 2.2.8 for more information.)
Enable print release	The MFD will perform as a print release station. Print release configuration is documented in the Copier Integration chapter of the <a href="#">PaperCut MF manual</a> .

#### 5.1.4 Restricting color copying

MFDs with SDK 4 or later can restrict color copying to one or more groups of users. This is configured in the **Filters & Restrictions** tab.

## 5.2 Shared accounts

Shared account configuration applies throughout PaperCut and is not specific to the MFD.

### 5.2.1 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 options available when the user prints. Selection from a list or using PIN/code are controlled at the user level via the **User Details** page. Account security/access is controlled at the account level via the **Security** tab on the **Account Details** page.

The search option will only appear on the MFD if the account list is long. Also, the list of shared accounts on the MFD is limited to 50 pages, so if there are more shared accounts, search by keyword or selection using PIN/code may need to be used.

### 5.2.2 Shared account options

Options to invoice and/or add comments to shared account activity are available on MFDs with SDK 4 or later. User-modifiable options, if any, are presented to the user at the MFD after selecting a

shared account, and are configured in the PaperCut administration web interface at the account level via the **Details** tab on the **Account Details** page.

### 5.3 Changing the PaperCut server or the MFD's name

The **Configuration** screen on the MFD (see Figure 11) allows the administrator to change the PaperCut server or the MFD's name.

To access the **Configuration** screen, press the **Admin** label in the lower right corner of the **Welcome** screen (see Figure 24).

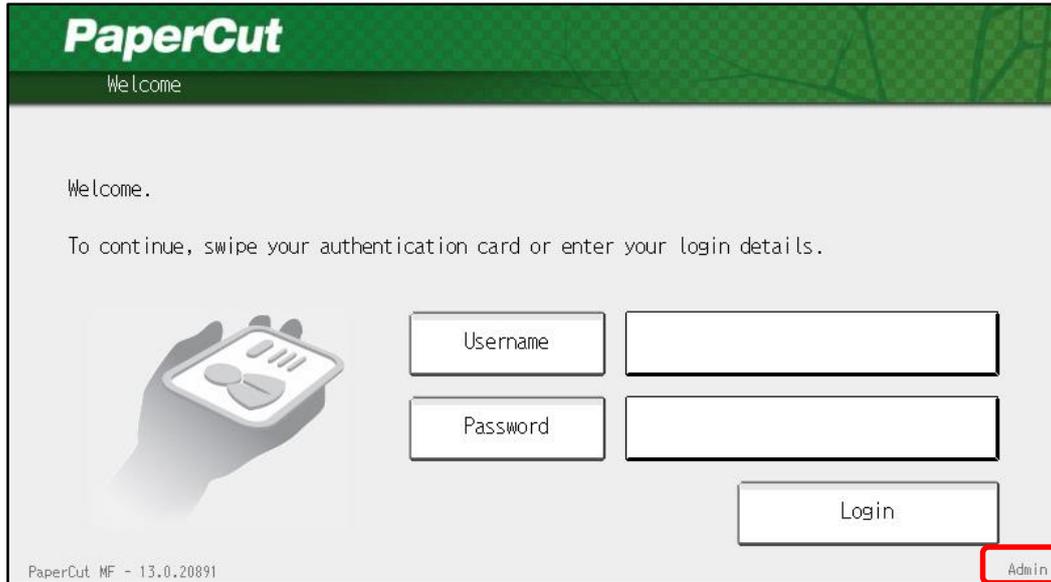


Figure 24: Admin link on the Welcome screen.

Enter the MFD's administrator credentials to access the settings.

**NOTE:** If you are changing the name of the MFD, please take care to also rename the MFD in the PaperCut administration web interface (in the **Actions** menu of the **Device Details** page).

### 5.4 Customizing text and messages

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

The text can be customized by editing the **Advanced Config** for the MFD in the PaperCut administration web interface. For more details, see section 6.1.

## 6 Advanced configuration

### 6.1 Config Editor

The common configuration options for an MFD in PaperCut are available in its **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 **Advanced Config** tab on the **Device Details** page.

Config name	Description
<code>ext-device-msg.copier-enabled-text</code>	<p>The text displayed on the account confirmation screen (the screen where the MFD is ready for use/copying). This can be used to provide specific information about using the MFD. Use <code>\n</code> to create a new line.</p> <p>Default: DEFAULT (use the default application text)</p>
<code>ext-device-msg.offline-welcome-text</code>	<p>The text displayed on the offline welcome screen (the screen displayed when the MFD switches to offline mode). This can be used to provide specific information about logging into the MFD. Use <code>\n</code> to create a new line.</p> <p>Default: DEFAULT (use the default application text)</p>
<code>ext-device-msg.session-page-limit</code>	<p>The message displayed when the <code>ext-device.ricoh.session-page-limit</code> is reached.</p> <p>Default: DEFAULT (use the default application text)</p>
<code>ext-device-msg.welcome-text</code>	<p>The text displayed on the welcome screen (the screen displayed after the MFD is connected to the PaperCut server). This text can be used to provide specific information about logging into the MFD. Use <code>\n</code> to create a new line.</p> <p>Default: DEFAULT (use the default application text)</p>
<code>ext-device.card-no-converter</code>	<p>See section 6.3.3.</p> <p>Default: GLOBAL (defer to the global configuration)</p>
<code>ext-device.card-no-regex</code>	<p>See section 6.3.2.</p> <p>Default: GLOBAL (defer to the global configuration)</p>

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<code>ext-device.card-self-association.use-secondary-card-number</code>	<p>Whether card numbers from 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.</p> <p>Set to Y to use the secondary card number, N to use the primary card number.</p> <p>Default: GLOBAL (defer to the global configuration)</p>
<code>ext-device.inactivity-timeout-secs</code>	<p>The amount of time (in seconds) to allow users between key presses before they are automatically logged out.</p> <p><b>NOTE:</b> The MFD's System Auto Reset Timer also impacts logout time.</p> <p>Default: 60</p>
<code>ext-device.ricoh.account-confirm.auto-switch.seconds</code>	<p>If account confirmation is enabled, the amount of time the account confirmation screen is displayed before switching to the <code>ext-device.ricoh.initial-screen</code>.</p> <p>Set to 0 to disable the auto-switch.</p> <p>Default: DEFAULT (8 seconds)</p>
<code>ext-device.ricoh.app-button1.label</code>	<p>The label for the first shortcut button. See section 6.6.</p> <p>Default: Application 1</p>
<code>ext-device.ricoh.app-button1.product-id</code>	<p>The application/screen/bookmark to display when the first shortcut button is pressed. See section 6.6.</p> <p>Default: DISABLED (hide the first shortcut button)</p>
<code>ext-device.ricoh.app-button2.label</code>	<p>The label for the second shortcut button. See section 6.6.</p> <p>Default: Application 2</p>
<code>ext-device.ricoh.app-button2.product-id</code>	<p>The application/screen/bookmark to display when the second shortcut button is pressed. See section 6.6.</p> <p>Default: DISABLED (hide the second shortcut button)</p>

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<code>ext-device.ricoh.card-reader.allow-sleep</code>	<p>When a card reader is connected, PaperCut by default will prevent the MFD entering sleep mode (it can still go into low power mode). This is done to allow card swipes to activate the MFD and log users in, at the cost of increased energy usage. When the MFD is in sleep mode, the PaperCut application is stopped and card swipes will not wake the MFD. Users may need to wake the MFD by pressing the <b>Energy Saver</b> key before using their swipe cards.</p> <p>Set to Y to allow the MFD to go into sleep mode.</p> <p>Default: N</p>
<code>ext-device.ricoh.global-scan-nx-ssso.domain</code>	<p>(Experimental) If defined, this value is passed to GlobalScan NX as the domain of the logged in user. See section 6.5.</p> <p>Default: NOT-DEFINED</p>
<code>ext-device.ricoh.global-scan-nx-ssso.enabled</code>	<p>Set to Y to enable GlobalScan NX SSO integration. See section 6.5.</p> <p>Default: N</p>
<code>ext-device.ricoh.global-scan-nx-ssso.home-dir-template</code>	<p>(Experimental) If defined, this value is used to populate the user's home directory for GlobalScan NX. This can only be used if all users' home directories are in the same location and differentiated by username, e.g. <code>\\server\homes\username</code>. The replacement <code>%username%</code> replaces the username component.</p> <p>Default: NOT-DEFINED</p>
<code>ext-device.ricoh.ice.jobs.incomplete-list</code>	<p>This is used to track Ricoh ICE Print Cloud print jobs (see section 6.7) and should not be modified unless requested by PaperCut support.</p>
<code>ext-device.ricoh.ice.jobs.timestamp</code>	<p>This is used to track Ricoh ICE Print Cloud print jobs (see section 6.7) and should not be modified unless requested by PaperCut support.</p>
<code>ext-device.ricoh.ice.log-jobs</code>	<p>Set to Y to enable Ricoh ICE Print Cloud print job tracking. See section 6.7.</p> <p>Default: N</p>

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<code>ext-device.ricoh.ice-unknown-username</code>	<p>Tracking Ricoh ICE Print Cloud print jobs (see section 6.7) involves associating a job with the user that was logged in at the time. If this association is unsuccessful, the job is logged against the user with this username.</p> <p>Default: unknown</p>
<code>ext-device.ricoh.initial-screen</code>	<p>Set to one of BROWSER/COPY/DOCUMENT/FAX/PRINT/SCAN to select the initial MFD function screen to display after logging in.</p> <p>Default: COPY</p>
<code>ext-device.ricoh.limit-reference.duplex</code>	<p>A reference page is used to determine how many pages can be copied/scanned/faxed based on cost.</p> <p>Set to Y if this reference page is duplex.</p> <p>Default: N</p>
<code>ext-device.ricoh.limit-reference.paper-size</code>	<p>The paper size of the reference page used to determine how many pages can be copied/scanned/faxed based on cost.</p> <p>Default: A4</p>
<code>ext-device.ricoh.locale</code>	<p>The locale (language setting) for display on the MFD in the form xx or xx_XX, if different to the MFD's locale, e.g. fr for French or zh_HK for Chinese (Hong Kong).</p> <p>Default: DEFAULT (use the MFD's locale)</p>
<code>ext-device.ricoh.permission-product-ids</code>	<p>The list of product IDs for other MFD applications that are permitted to be used only when users are logged in.</p> <p>Default: DEFAULT (no other applications)</p>
<code>ext-device.ricoh.release-show-cost</code>	<p>Set to N to not show job costs in print release screens.</p> <p>Default: Y</p>
<code>ext-device.ricoh.release-show-device-functions</code>	<p>Set to N to not show the <b>Use Device Functions</b> button in print release screens. This could be used if the device is used for print release only.</p> <p>Default: Y</p>

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<code>ext-device.ricoh.release-show-printer-errors</code>	Set to N to not show printer errors in print release screens. Default: Y
<code>ext-device.ricoh.scan-to-me.enabled</code>	Set to Y to add the user's email address (if known) to the MFD's address book under the <code>ext-device.ricoh.scan-to-me.label</code> . See section 6.4. Default: N
<code>ext-device.ricoh.scan-to-me.label</code>	The name used when adding the user's email address (if known) to the address book. See section 6.4. Default: DEFAULT
<code>ext-device.ricoh.session-page-limit</code>	Set to a non-zero value to limit the number of pages a user can copy/scan/fax in a single user session. Once this page limit is reached the job is cancelled and the user is notified, using the <code>ext-device-msg.session-page-limit</code> message. Default: NONE (no limit)
<code>ext-device.ricoh.snmp-community</code>	The community name to use for all SNMP queries excluding hardware checks. Default: public
<code>ext-device.ricoh.snmp-job-detection</code>	A user will not be completely logged out until all the user's tracked copy/scan/fax jobs have completed. To determine if a tracked job is in progress, PaperCut queries the MFD using SNMP. Set to N to revert to using page event notifications to determine this. Default: Y
<code>ext-device.self-association-allowed-card-regex</code>	Only card numbers matching this regex are allowed to be associated with existing accounts. See section 6.3.2 for more information about regexes. Default: .* (match all card numbers)

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## 6.2 Customizing the header

The embedded application has a header at the top of all screens. This header defaults to the PaperCut logo and design, but can be replaced with one that includes your organization's color scheme and logo.

### 6.2.1 Header image

The embedded application header is a single full-width image (see Figure 25). This image can be replaced by an image with your organization's logo.



Figure 25: Header image.

There are two sizes of header images for MFDs with different screen sizes:

- header . jpg (800 x 80 pixels) for large screen MFDs
- header - small . jpg (480 x 48 pixels) for small screen MFDs

When providing replacement images:

- The image dimensions must be identical to those above.
- MFDs can have trouble displaying some JPEG images. See section 6.2.1.1 for details.

PaperCut also displays a title message and buttons in the header area. These areas should be left clear in your header (see Figure 26).



Figure 26: Title message and buttons in the header.

The area for the text should contrast the font color (white by default – to change see section 6.2.2), and should be positioned:

- 75 pixels from the left for large screens (header . jpg)
- 40 pixels from the left for small screens (header - small . jpg)

These images should be saved in the `images` subdirectory of the application (see Figure 27) prior to creation of the ZIP file (see section 2.2.9.1).

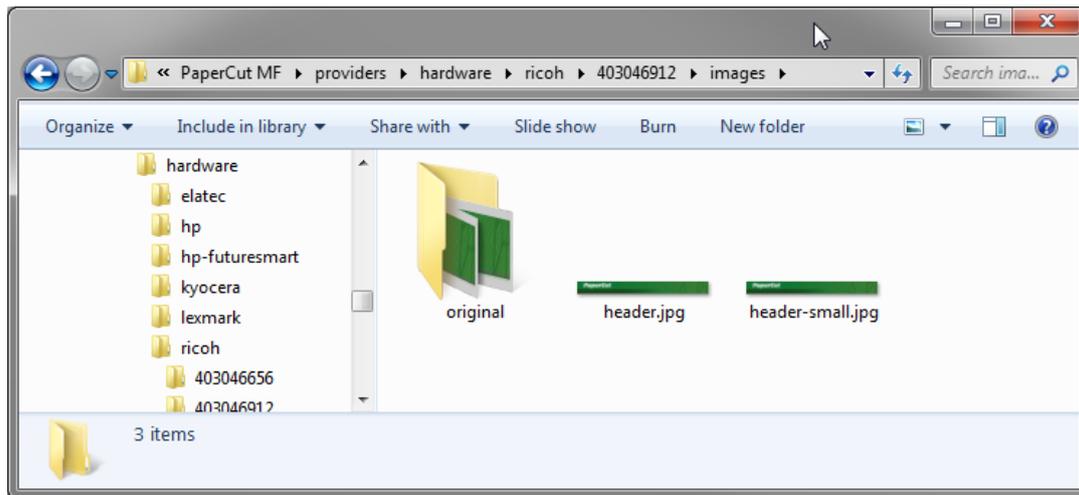


Figure 27: Images folder.

### 6.2.1.1 Tips for saving JPEG images

Issues have been found on Ricoh MFDs when displaying some JPEG images. If the provided header cannot be rendered, it will appear blank. If this occurs, it is recommended that you use Microsoft Paint to save the image. Programs such as Adobe Photoshop save a modified Huffman Table that is not compatible with Ricoh MFDs.

If the image is still not displaying, it is recommended that you:

- Try reducing the quality of the image.
- Remove the thumbnail. This has been shown to sometimes stop the MFD from drawing the JPEG. Use the JPEG save options in your image editor to not include a thumbnail or use a tool like Exif Tag Remover (<http://www.rvision.com/exif/>).

### 6.2.2 Header font color

The header font color is defined in the `config.properties` file of the embedded application directory. Use a text editor to edit this file prior to preparing the application ZIP file. Set the `header-font-color` value as required (defaults to white `#FFFFFF`).

The color is 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.

**NOTE:** Ricoh MFDs have a limited color palette (216 colors) and will convert the colors to the “closest” color. It is recommended to use one of the following hexadecimal color values for each color component: `00`, `33`, `66`, `99`, `CC`, `FF`.

## 6.3 Swipe card readers

For the list of supported card readers, see section 9.

Supporting swipe card authentication is as easy as:

1. Connecting a supported card reader to the MFD via the USB port.  
**NOTE:** On some MFDs this is hidden under a panel/sticker on the side panel.
2. Enabling **Swipe card** as an **Authentication method** in the MFD’s configuration in the PaperCut administration web interface.

3. If the card reader is not being detected, try stopping and starting the PaperCut embedded application, or rebooting the MFD.

**NOTE:** On MFDs with SDK 12 or later, it may be necessary to register the card reader. At the MFD, in **User Tools** → **System Settings** → **General Features**, set **Compatible ID** to Active and then select **Program/Change USB Device List** and enter the card reader's Vendor and Product IDs.

4. Ensure the card number, as read by the reader, is loaded into the **Primary** or **Secondary Card/Identity Numbers** fields in PaperCut (or consider enabling self-association).

**NOTE:** When a card reader is connected and swipe card authentication is enabled, PaperCut by default will prevent sleep mode. This can be changed by setting `ext-device.ricoh.card-reader.allow-sleep` to Y (see section 6.1).

Swipe cards contain numbers used to identify users according to the card number configured under **Card/Identity Numbers** in a user's **User Details** page of the PaperCut administration web interface. Some readers report information in addition to the number encoded on the card, such as checksums. PaperCut can treat these cases in three ways:

- no conversion required
- regular expression filter
- format conversion

### 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 (regex) 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](http://www.regular-expressions.info).

The regex must be fashioned so that the card number is returned as the first match group.

Usually one regex will be used for all the devices managed by PaperCut; this must be entered in the **Config Editor**, accessed with the **Config editor (advanced)** action on the **Options** page of the PaperCut administration web interface. The key is called `ext-device.card-no-regex`.

The global setting can be overridden on a per-device basis. The key `ext-device.card-no-regex` can also be found on the **Advanced Config** tab on the **Device Details** page. This setting will override the global setting unless the keyword GLOBAL is specified.

PaperCut developers will gladly assist in producing a regex when supplied with a few sample outputs from your card reader. Please contact PaperCut support.

If you would like to write your own regexes, 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 equals signs 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 built-in 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 do not 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 converters may be defined in the PaperCut administration web interface on either a global basis (applies to all devices) or on a per-device basis.

To set globally:

1. On the **Options** page, click **Config editor (advanced)**.
2. Search for `ext-device.card-no-converter`.
3. Enter the name of the required converter (see the table below) and click **Update**.

To set at the device level:

1. Go to the **Advanced Config** tab on the **Devices Details** page for the device.
2. Search for `ext-device.card-no-converter`.
3. Enter the name of the required converter (see the table below) and click **Update**.

#### 6.3.3.1 Standard converters

The following table lists the converters available.

Converter	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. For example, 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>` Define a custom conversion function in JavaScript (see section 6.3.3.2).

---

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 the 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 third-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 Scan to me

Ricoh MFDs do not have a standard mechanism to allow PaperCut to provide the user's email address for scan-to-me functionality. This is something we have formally requested Ricoh add to future ESA releases.

As an alternative, the PaperCut application can add the user's email address to the MFD address book when the user logs in. This allows the user to easily select their email address when performing a scan to email.

To enable this function, set the advanced configuration value `ext-device.ricoh.scan-to-me.enabled` to Y (see section 6.1).

By default the address is added under the name `Scan to me`, but this can be changed using the `ext-device.ricoh.scan-to-me.label` setting.

**NOTE:** Adding the email address to the address book adds approximately two seconds to the login process.

**IMPORTANT:** The PaperCut application requires the MFD's administrator credentials to edit the MFD address book. The application collects this when you access the **Configuration** screen on the MFD (see section 5.3). If these credentials change, you will need to access this screen again to update the credentials in the application.

## 6.5 GlobalScan NX Single Sign-On

GlobalScan NX is a scanning solution developed by Ricoh. This section assumes you are running GlobalScan NX and it is configured on your MFD.

The PaperCut application can be configured to pass the user's authentication information (e.g. name, email address) to the GlobalScan NX software. This allows the user information to be used by GlobalScan NX (e.g. to perform a scan-to-me function).

To enable this, set the advanced configuration `ext-device.ricoh.global-scan-nx-ssso.enabled` to Y. See section 6.1 for information on advanced configuration, including some additional GlobalScan NX Single Sign-On (SSO) settings.

**NOTE:** Scanning performed within GlobalScan NX is not tracked by PaperCut (see section 7.1.5).

## 6.6 Shortcut buttons

PaperCut allows for up to two shortcut buttons. These buttons appear after login on the account confirmation screen and can be used to conveniently switch to ESA/Java SDK applications, MFD function screens and bookmarked URLs (for MFDs with the Device browser installed and SDK version 11 or later).

### 6.6.1 Application shortcuts

**NOTE:** Application shortcuts are particularly useful on MFDs with SDK versions earlier than version 10 (see section 6.6.1.1).

The product ID of the target application (not PaperCut) is required to create an application shortcut button:

1. Log in to Ricoh Web Image Monitor for the MFD.
2. Navigate to **Device Management** → **Configuration** → **Extended Feature Settings** → **Extended Feature Info**.

3. Locate the target application and press the small list icon next to the application. This will display detailed information about the application, which includes the 9-digit application product ID (see Figure 28).

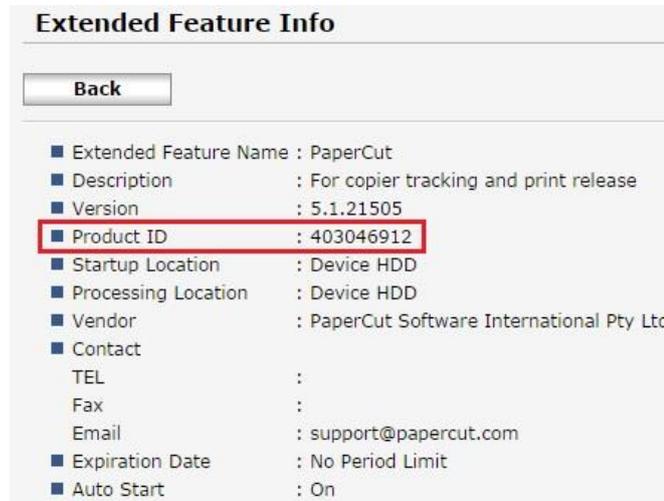


Figure 28: Determining an application's product ID.

4. Take note of the application product ID and follow the steps in section 6.6.4.

#### 6.6.1.1 MFDs with SDK versions earlier than version 10

When multiple ESA/Java SDK applications are running on MFDs with SDK versions earlier than version 10, they all share the same **Other Function** key. When this key is pressed, the user is shown a screen to choose which application to display. This behavior can be confusing.

To overcome this issue, it is recommended to:

1. Set PaperCut as the priority application.
2. Configure a shortcut button for the other application.

In this configuration:

- The PaperCut application is displayed whenever the **Other Function** key is pressed.
- PaperCut displays a button for the user to switch to the alternate application. The button is displayed only after the user is logged in.

#### 6.6.2 MFD function screen shortcuts

The initial MFD function screen displayed after logging in can be changed by editing `ext-device.ricoh.initial-screen` (see section 6.1), but it can be convenient to also have a shortcut button that switches to a different screen.

When configuring the shortcut button to switch to a screen, select one of BROWSER/COPY/DOCUMENT/FAX/PRINT/SCAN and prefix it with `screen:` (see section 6.6.4).

#### 6.6.3 Device browser bookmark shortcut

On MFDs with the Device browser installed and SDK version 11 or later, it is also possible to switch to the browser and open a preconfigured browser bookmark. The bookmark's name is used when configuring the shortcut button and must be prefixed with `bookmark:` (see section 6.6.4).

## 6.6.4 Configuring the buttons

To configure the first shortcut button:

1. Log in to the PaperCut administration web interface.
2. On the **Devices** tab, select the MFD to configure.
3. Select the **Advanced Config** tab.
4. Locate the entry `ext-device.ricoh.app-button1.label1`. This is the label that will appear on the shortcut button.
5. Change the button label as appropriate, and click **Update** next to the setting.
6. Locate the entry `ext-device.ricoh.app-button1.product-id`.
7. Enter the application product ID (e.g. 123456789; see section 6.6.1), screen identifier (e.g. `screen:SCAN`; see section 6.6.2) or bookmark name (e.g. `bookmark:ICE`; see section 6.6.3) and click **Update** next to the setting.
8. Confirm that the settings were saved. The settings will take effect after a short period of time.

To create a second shortcut button, perform the same steps with `ext-device.ricoh.app-button2.label1` and `ext-device.ricoh.app-button2.product-id`.

To disable a shortcut button, set its product ID to `DISABLED`.

## 6.7 ICE Print Cloud print jobs

Ricoh ICE (Integrated Cloud Environment) Print Cloud print jobs released at the MFD can be tracked by PaperCut. This is enabled by `ext-device.ricoh.ice.log-jobs` (see section 6.1).

Tracking Print Cloud print jobs involves associating each job with the user that was logged in at the time of the job. The system must be set up in a specific way to achieve this:

1. The system time and time zone of the PaperCut server must be correct, because the time of the job is set by the Print Cloud server. This can be achieved by using the Network Time Protocol (NTP).
2. SNMP must be enabled on the MFD and using the `public` community name. If you want to use a different community name then change `ext-device.ricoh.snmp-community` (see section 6.1).
3. Access to Print Cloud print release should only be granted while the user is logged in to PaperCut. This can be achieved with the Device browser by enabling the **Browser** option in the MFD's Enhanced External Charge Unit (see section 2.2.6.2).

Print Cloud print jobs are logged as copies.

We recommend configuring a shortcut button that switches to the Device browser and opens the ICE webpage (see section 6.6).

**NOTE:** A number of limitations also apply, see section 7.1.9.

## 7 Known limitations

### 7.1 MFDs with SDK 4 or later

#### 7.1.1 USB print tracking

Ricoh MFDs currently do not support tracking or limiting of USB printing performed by users. This is a limitation in the SDK. Ricoh are aware of this limitation and PaperCut have requested that this capability be added to future ESA releases.

To disable USB printing completely, at the MFD select **User Tools** → **System Settings** → **Administrator Tools** → **Media Slot Use** → **Print from Memory Storage Device**, and set this to **Prohibit**.

#### 7.1.2 Zero stop

In an ideal implementation, PaperCut would be able to control exactly how many pages a user can copy and always prevent the user from overdrawing an account. With the Ricoh SDK, PaperCut is informed *after* each page is copied/scanned/faxed. This limits how strictly we can control usage because we only learn of the usage after it has occurred.

Once PaperCut detects that the user has no available credit to continue, it instructs the MFD to stop the job. In some cases this may result in a small overrun.

This overrun may also happen when different page types have different costs (e.g. for color and grayscale pages). The user may have enough credit to perform grayscale copying (but not color), so PaperCut will allow the job to continue. If a user then copies a color page, this will be detected and the job will be stopped, but this color page will be printed, resulting in a small overrun.

If the user is detected to not have enough credit for a particular function at the time of login, that function is disabled.

The Ricoh SDK only allows changes to function permissions when the user is logged out. This means that if a function with a non-zero cost is enabled and the user is detected to have run out of credit, the user will be logged out, even if another function with zero cost is enabled. The user will be able to log back in to use the zero-cost function, but the function with non-zero cost will be disabled.

#### 7.1.3 Scan to me

PaperCut provides a scan-to-me feature that adds the user's email address to the address book at login (see section 6.4). This functionality makes use of the Ricoh SDK to modify the address book.

When the user logs in, PaperCut attempts to open the address book for modification, but if the MFD does not allow access to the address book, the user's email address will not be added. This can occur on some MFDs when they are actively printing at the time of login. It appears that while the MFD is printing, it locks the address book so it cannot be modified by PaperCut.

If there is a failure to modify the address book, on MFDs with panels larger than 4.3 inches (10.9 cm) this will be indicated by an error message on the account confirmation screen.

### 7.1.4 Fax tracking

Due to limitations in the Ricoh SDK, the PaperCut application is only notified of fax events when the user is logged in to the MFD. Depending on the size of the fax, it may take a number of minutes to deliver and receive the successful notification. If the user has logged out, the fax will not be logged.

This is an unfortunate limitation in the Ricoh SDK, and we are working with Ricoh to resolve this.

To mitigate this problem, PaperCut will disable the automatic logout timeout when a fax job is started, and then enable the timeout when the fax is received. This means that faxes will be successfully logged as long as the user does not log out.

If another user logs in and then the fax transmission is completed, the fax may be charged against this new user.

It is recommended to change the fax transmission mode to “Immediate TX” (see section 2.2.8).

### 7.1.5 Track/control usage from third-party applications

The ESA SDK does not allow PaperCut to track or control MFD usage (e.g. copy/scan/fax) initiated from third-party applications (e.g. GlobalScan NX). When the built-in copy/scan/fax applications are used, the MFD notifies the PaperCut application of the usage, and PaperCut can cancel the job if the user does not have credit.

When usage is performed from third-party applications, as a result of a limitation in the ESA SDK the PaperCut application is not notified, so this usage cannot be tracked or controlled.

PaperCut has requested Ricoh remove this limitation in future ESA releases.

### 7.1.6 Set Key Card is always shown after entering System Settings

When a user selects the **System Settings** button to change settings such as paper trays, the MFD will log the user out at a system level. The user will then need to log out of PaperCut and back in again. This workflow is enforced by the MFD.

### 7.1.7 Duplex copy jobs with an odd number of pages split into two jobs

Because of the way that copy jobs are reported by the Ricoh SDK (page by page), jobs that have an odd number of pages will be reported as two jobs, e.g. a three page job will be reported as a duplex job of two pages and a simplex job of one page.

### 7.1.8 External USB keyboards

External USB keyboards are not supported. If the MFD is configured to enable an external USB keyboard, this may interfere with card reader functionality. In this case, a Ricoh technician will need to change the following system parameter to disable the external USB keyboard:

SP-5-075-001 (USB Keyboard Function Setting) → 0

### 7.1.9 ICE Print Cloud print job tracking

The following limitations apply when tracking ICE Print Cloud print jobs released at the MFD (see section 6.7):

- There is no zero stop, so a job could cause the user to overdraw an account.

- If the time of the job falls outside the time a user is logged in to the MFD, the job will be logged against the user with the username specified by `ext-device.ricoh.ice.unknown-username` (see section 6.1).
- There is no page-level color detection. If any page is color, the job will be charged as if all pages are color.

### 7.1.10 MFDs with SDK 4/5/7

PaperCut makes use of some functionality available on MFDs with SDK 10 or later. These are mostly small usability improvements. If the MFD is running an earlier SDK version (i.e. 4, 5 or 7) then these features are not available:

- The **Logout** key cannot be used to log out when the application is not in focus.
- A card swipe cannot wake the MFD in low power mode. The user must press the screen or a key.
- The application will not auto-switch to the initial screen after login. The user must press the function key to select the function to use. Disabling the **Show account confirmation** option will also have no effect.

## 7.2 MFDs with SDK 2

MFDs with SDK 2 provide a limited environment for copier control applications like PaperCut. The following limitations exist on these MFDs:

- No zero-stop support, i.e. the ability to stop copying in progress when a user runs out of credit.
- No support for swipe card authentication, i.e. no support for USB card readers.
- No support for tracking faxing or scanning.
- Copy settings from the previous user may not be cleared when the next user logs in (e.g. copy counts, color). These MFDs do not allow third-party applications to tell the MFD when the user logs out. It is recommended to set the reset timer to a short time to reduce the impact of this issue.

## 8 Troubleshooting and frequently asked questions

**The MFD administrator settings do not include** Extended Feature Settings.

This may indicate that you do not have the Ricoh Java VM card installed correctly. Check that the Java SD card is inserted into Slot 3 of the MFD. If you have problems enabling the Java VM card, please contact your hardware vendor for assistance.

**What is the IP address of my PaperCut server?**

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

**The embedded application just shows** Connecting to server.

This indicates that the embedded application is unable to connect to the PaperCut server over the network. The embedded application will continually try to connect to the server (trying both the server name and IP), so if there is a temporary network outage then it will start working once the connection is available again.

Common causes of this problem are:

- The PaperCut server is not running.
- There are firewalls or network routing configuration that stop the network connection being established. Check for firewalls on the PaperCut server or check with your network administrator.
- There is a network outage that is stopping the connection being established. Try accessing Ricoh Web Image Monitor for the MFD to check that a network connection can be established.
- The PaperCut server name or IP is set incorrectly. This can be checked/set on the **Configuration** screen on the MFD (see section 5.3).

**The PaperCut embedded application version number did not change after an upgrade.**

This can happen if there is a printer error (e.g. a printer door/cover is open). Ensure that there are no printer errors and try again.

**Can I allow users free scanning and continue to charge for copying?**

Yes. The recommended way to do this is to enable the scanning function in the Enhanced External Charge Unit (see section 2.2.6.2) and to enable **Track & control scanning** in the PaperCut administration web interface with a **Page cost** of zero.

**When I connect the card reader, the message** Incompatible USB device has been connected **appears.**

This message is from the MFD, not the PaperCut application. This indicates that the MFD does not recognize the connected USB card reader. However the reader can still work with PaperCut if it is a supported card reader.

A Ricoh technician can disable this message by configuring the following system parameter:

SP-5-844-100 (USB Notify Unsupport) → 0

**I connected the card reader but the message Swipe card authentication is enabled but no USB card reader is connected is still displayed.**

On MFDs with SDK 12 or later, it may be necessary to register the card reader. See section 6.3 for details.

**I see an error on the Ricoh LCD screen.**

This may indicate a configuration issue, or may be a software bug. Recheck your settings and restart (i.e. power-cycle) the MFD. If problems continue, please collect the Ricoh log files (see KB article) and contact PaperCut support.

**My users have symbols in their passwords and/or it is difficult to enter their usernames. What options do I have?**

The Shift button offers additional symbols. Use of this, however, is cumbersome. You may wish to instruct your users to change their network passwords to contain only standard characters. Another option is to enable the **Identity number** authentication option. This may be used in addition to or as a replacement for **Username and password** authentication and can be limited to numbers only.

**Why are the MFD screens and PaperCut screens displaying in different languages?**

By default, the PaperCut screens will use the setting in the configuration key `ext-device.ricoh.locale`. If the PaperCut screens are in the incorrect language you will need to update this key to match the MFD's setting.

**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.

## 9 Appendix: Supported authentication card readers

The supported card readers are listed in the following table.

Card Type	Manufacturer	Model
Barcode	CIS	MinyScan (various models)
Casi-Rusco / HID / iCLASS / Indala / LEGIC / MIFARE	Elatec	TWN3 (various models)
Casi-Rusco / HID / iCLASS / Indala / LEGIC / MIFARE / NexWatch	Elatec	TWN4 (various models)
HID / iCLASS / Indala / MIFARE	HID Global	Omnikey 5427CK
HID / iCLASS / Indala / LEGIC / MIFARE	Inepro	Omni
LEGIC / MIFARE	Interflex	IF-72
Magstripe / Swipe	MagTek	USB reader
Casi-Rusco	RF IDEas	RDR-6281AKU (#)
HID	RF IDEas	RDR-6081AKU (#)
iCLASS	RF IDEas	RDR-7081AKU (#)
iCLASS / MIFARE	RF IDEas	RDR-7585AKU (#)
Indala	RF IDEas	RDR-6381AKU (#)
MIFARE (*)	RF IDEas	RDR-7581AKU (#)
NexWatch	RF IDEas	RDR-6N81AKU (#)

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Magstripe / Swipe	RF IDEas	pcSwipe magstripe (^)
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Magstripe / Swipe	Tysso	TMSR-33-U-SB
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# ensure the numeric keypad is not used, see section 9.2

\* ISO 14443, Type A – read only; MIFARE Standard serial number

^ requires configuration, see section 9.3

Support may be added for other card readers. Please contact PaperCut support for assistance.

## 9.1 Biometric support

Biometric scanners connected via USB that effectively emulate a USB card reader can also be used for authentication. The supported scanners are:

- BioStore IDPoint
- Live Register Print Release Terminal
- Nationwide Retail Systems (NRS) Smart iD

## 9.2 Configuration of RF IDEas pcProx and pcProxPlus readers

For RF IDEas pcProx and pcProxPlus readers, the numeric keypad must not be used. You can use the pcProxConfig utility (available from the RF IDEas website) to configure this (see Figure 29).

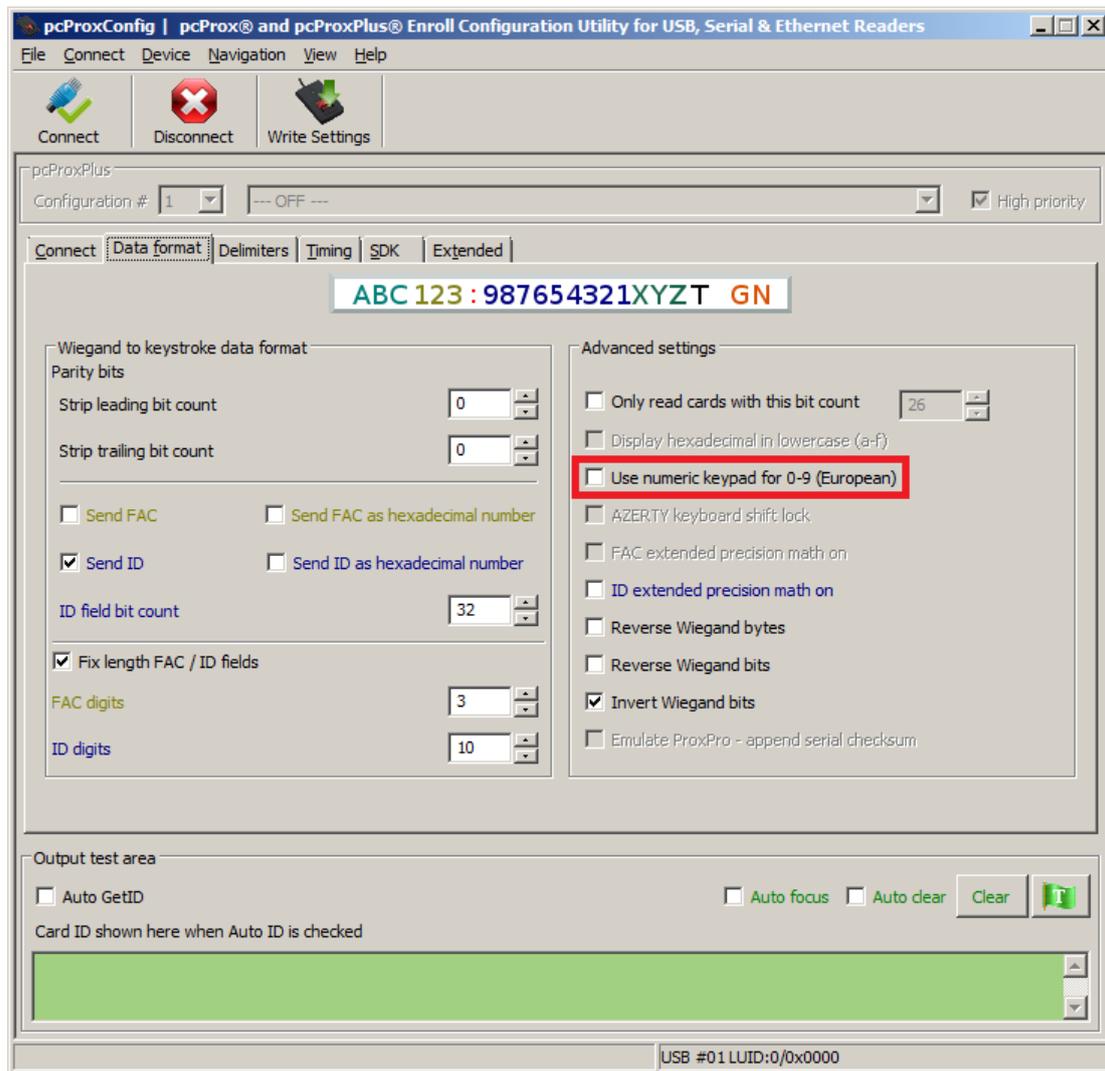


Figure 29: pcProxConfig numeric keypad setting.

### 9.3 Configuration of RF IDEas pcSwipe magstripe reader

For the RF IDEas magstripe reader to work, it must be reconfigured using the pcSwipeConfig utility available from the RF IDEas website. Use this utility to configure the reader as pictured in Figure 30 and Figure 31.

1. Enable **User Field 1** and **User Field 2** as shown and disable all other fields.
2. Make other changes as highlighted in **RED**.
3. Click the **Flash** button to save configuration to the card reader.

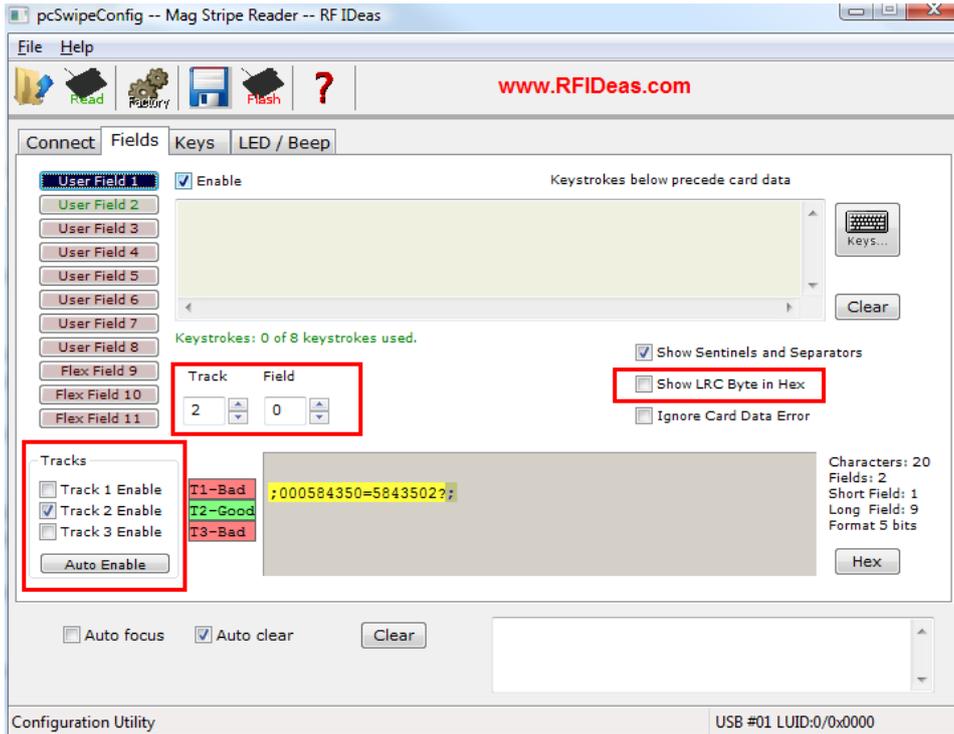


Figure 30: pcSwipeConfig User Field 1.

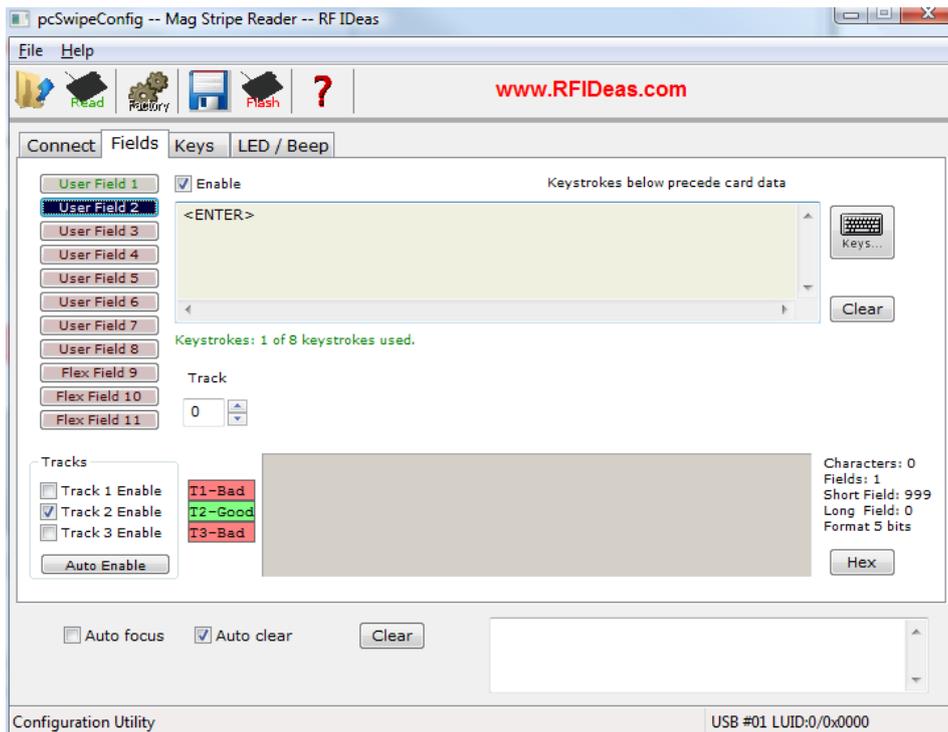


Figure 31: pcSwipeConfig User Field 2.

# 10 Appendix: Screenshots for user information sheets

Many organizations like to provide detailed step-by-step instructions to their users to guide them through MFD use. In addition to the screenshots in the previous sections of this manual, screenshots in this section are provided to be copied into user information sheets.

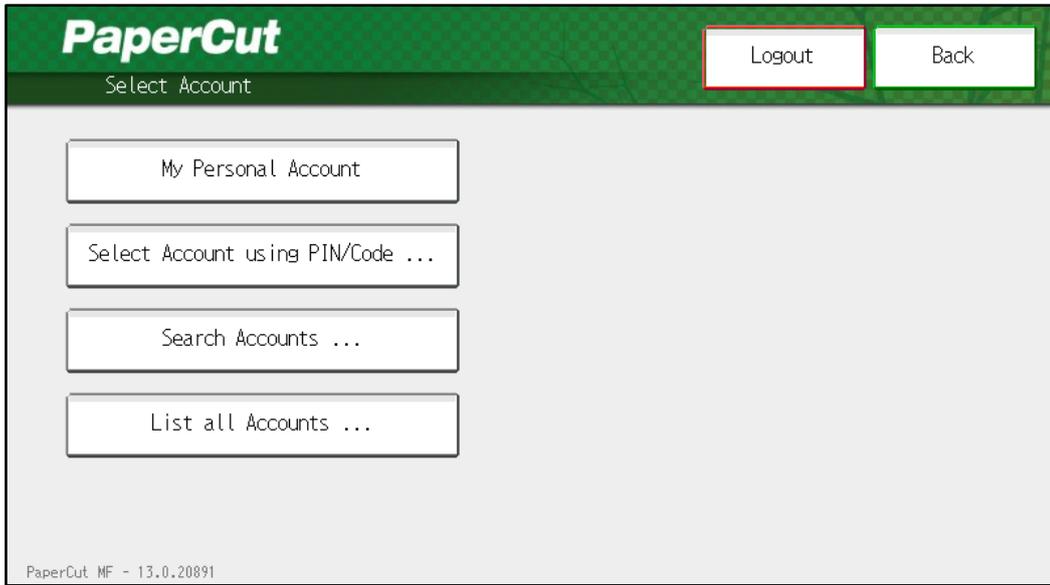


Figure 32: Standard account selection screen.

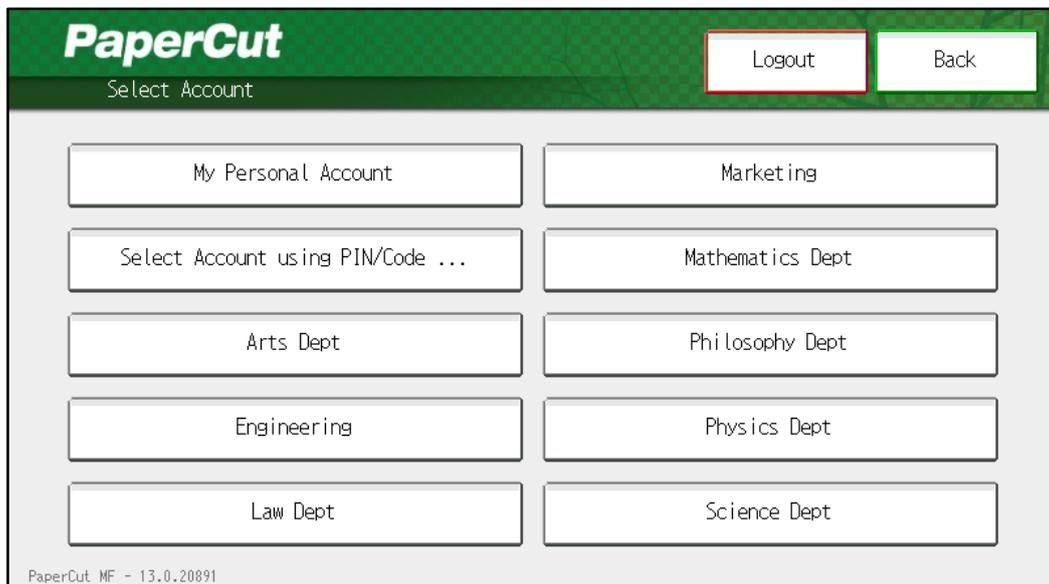


Figure 33: Advanced account selection screen.

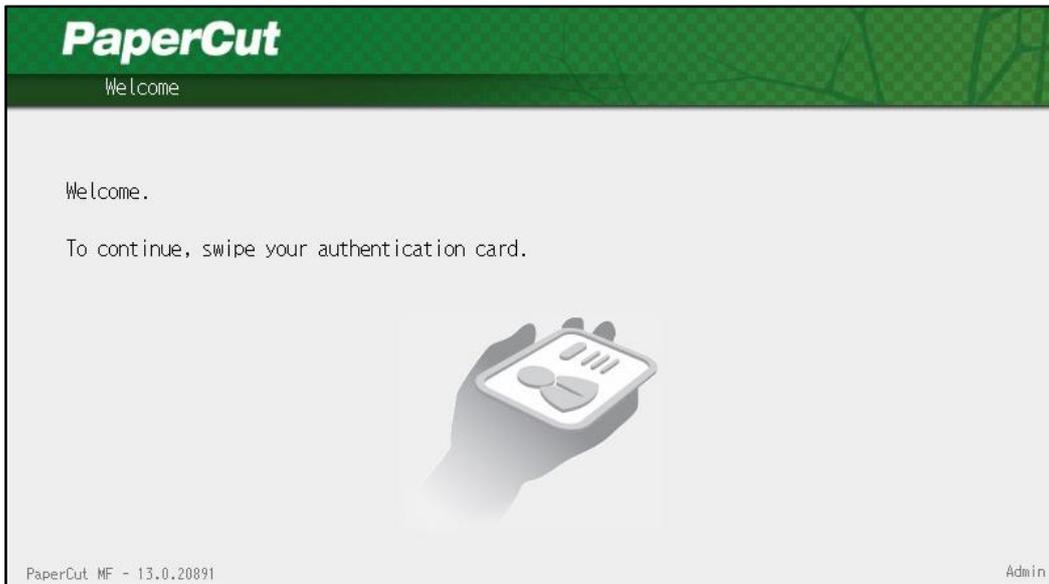


Figure 34: Welcome screen with swipe card authentication.

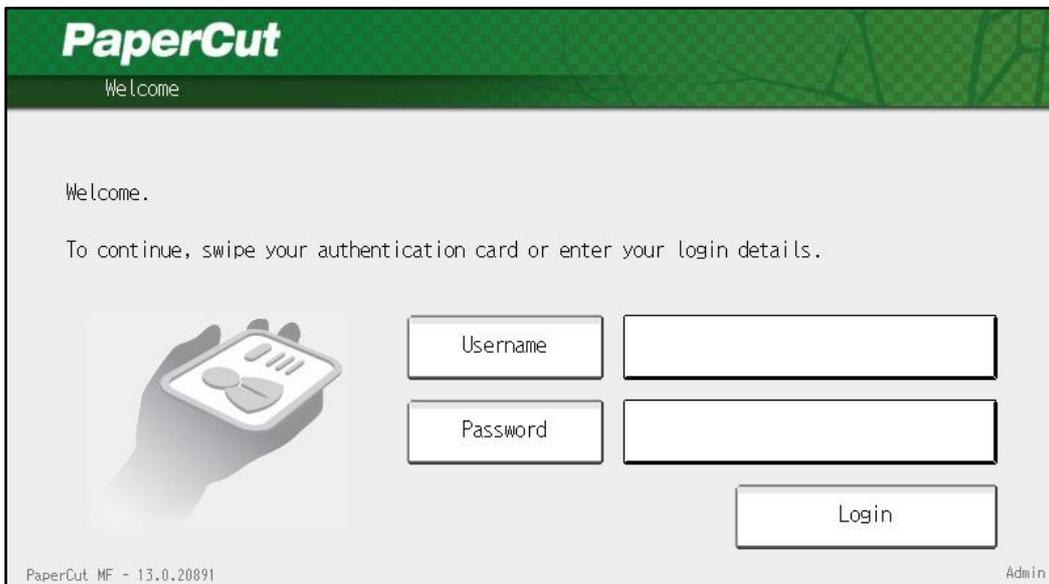


Figure 35: Welcome screen with username and swipe card authentication.

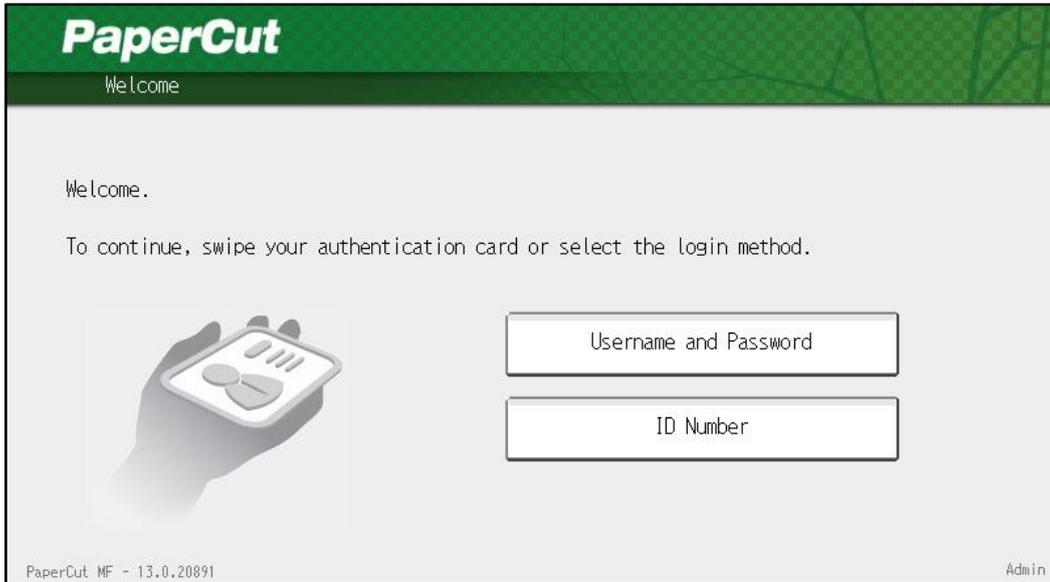


Figure 36: Welcome screen with username, ID number and swipe card authentication.

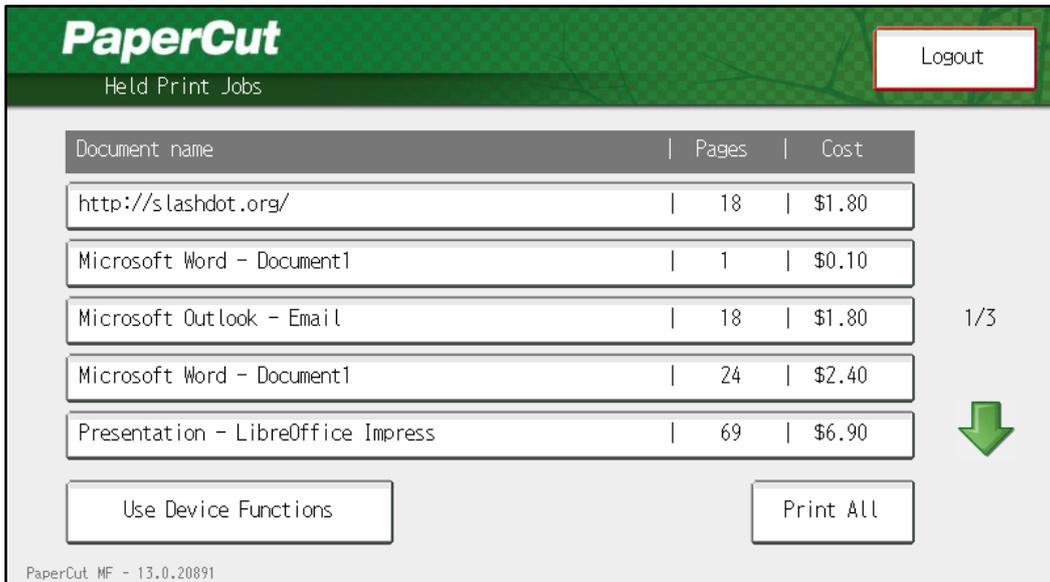


Figure 37: Print release screen.

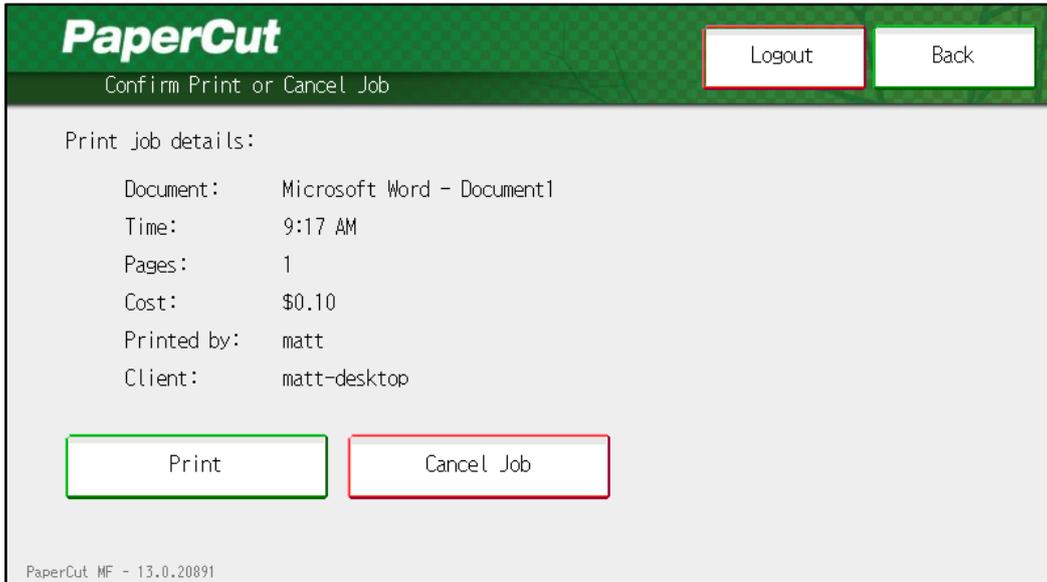


Figure 38: Print job screen.

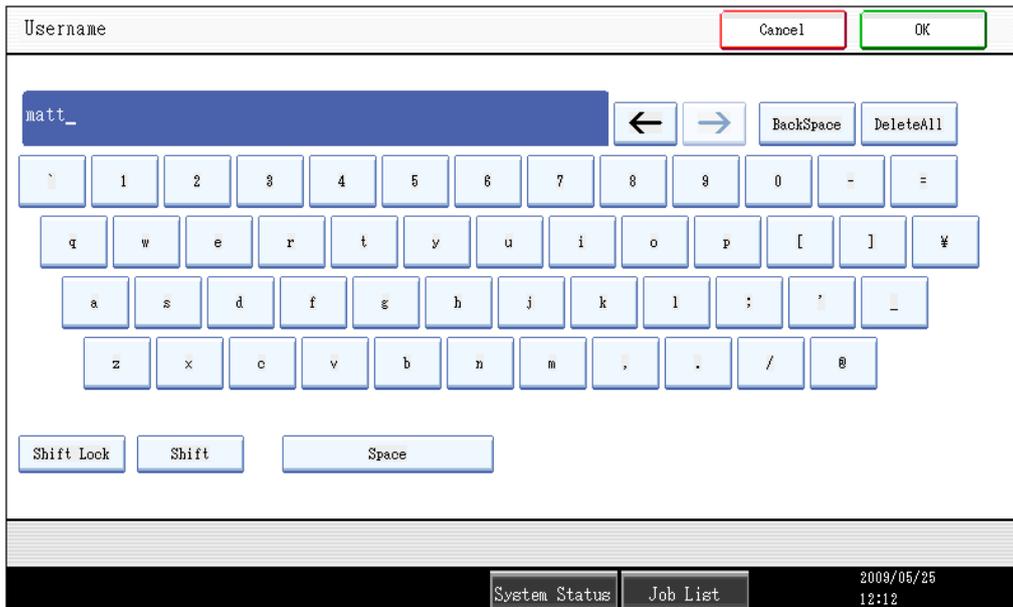


Figure 39: Entering a username.

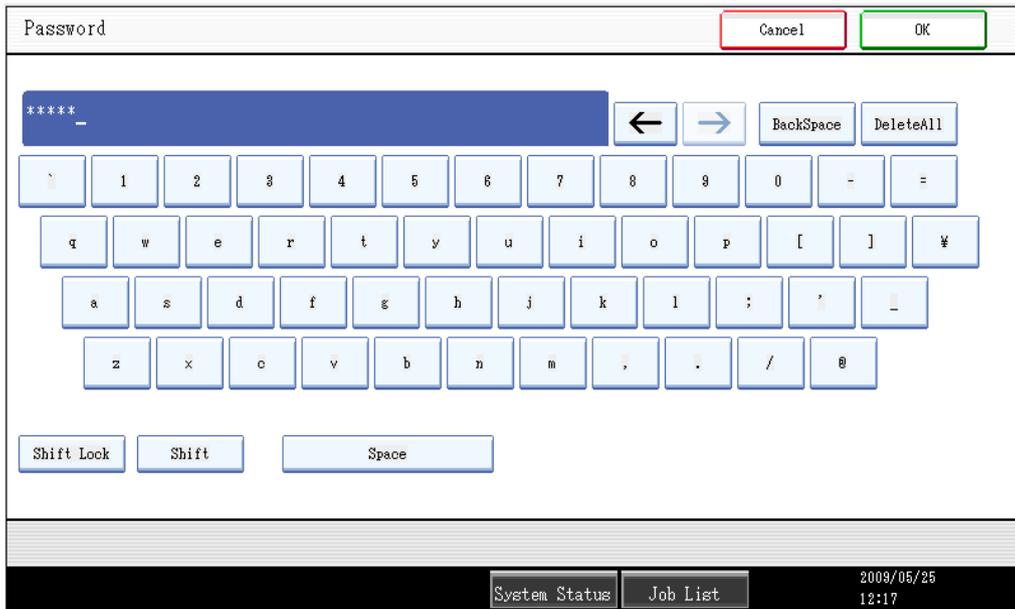


Figure 40: Entering a password.

# 11 Appendix: Setup for MFDs with SDK 2

**IMPORTANT:**

MFDs with SDK 2 have reached the end of support life.  
See <http://www.papercut.com/kb/Main/EndOfLifePolicy>

This section describes how to install the PaperCut application on MFDs with SDK 2. Please see section 2.1 to determine which version your MFD supports.

For this section of the document you will be installing application version 403046656.

To install the PaperCut application on newer MFDs please see section 2.2.

## 11.1 Setup procedure for MFDs with SDK 2

### 11.1.1 Install the application via Ricoh Web Image Monitor

Web installation provides a convenient way to install the embedded application. It can be done remotely on multiple MFDs using just a web browser. This is the simplest way to install the embedded application.

#### 11.1.1.1 Prepare the application ZIP file

The first step is to create an application ZIP file to be uploaded to the MFD.

1. On the PaperCut server, open the directory that contains the embedded application:  

```
<app-dir>\providers\hardware\ricoh\deprecated\403046656
```
2. Open the `connection.properties` file in this folder and verify the `server-name` and `server-ip` are set to the network name and address of the PaperCut server. It is recommended to set `server-name` to a name that can be resolved by the Ricoh MFD (e.g. the DNS name of the PaperCut server).
3. Use a ZIP tool to create a ZIP file containing all the files in the above directory. The name of the ZIP file is not important.
4. Copy the ZIP file to the location from where you will perform the installation (i.e. any workstation with network access to the MFD).

#### 11.1.1.2 Install the application

To install the application, perform the following steps:

1. Log in to Ricoh Web Image Monitor for the MFD as the administrator.
2. Go to **Device Management** → **Configuration** and then under **Extended Feature Settings** select **Install** (see Figure 41).



Figure 41: Accessing the Install link.

3. Select the **Local File** option, then click the **Browse...** button and select the embedded application ZIP file. Then click the **Display Extended Feature List** button (see Figure 42) to upload the file. This may take a minute or two.

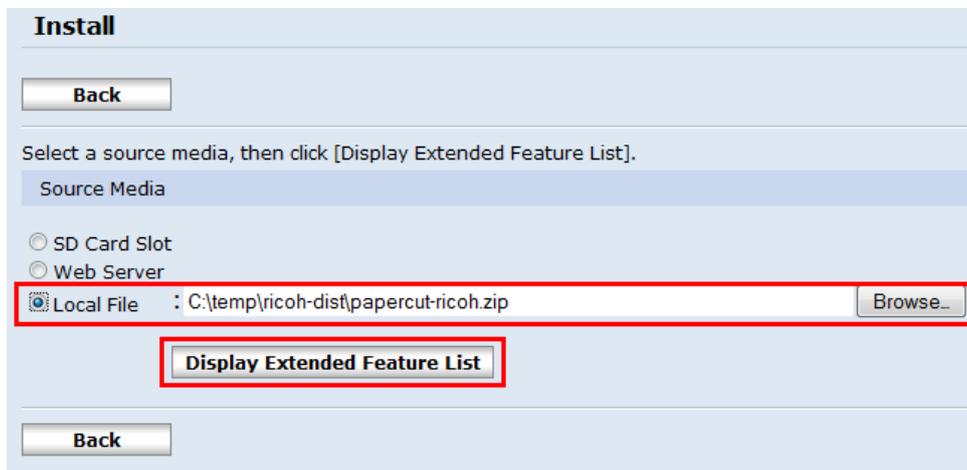


Figure 42: Uploading the application.

4. Change the install location to **Device HDD**, set **Auto Start** to **On** (but don't click **Install**), then select **PaperCut** in the table of applications (see Figure 43).

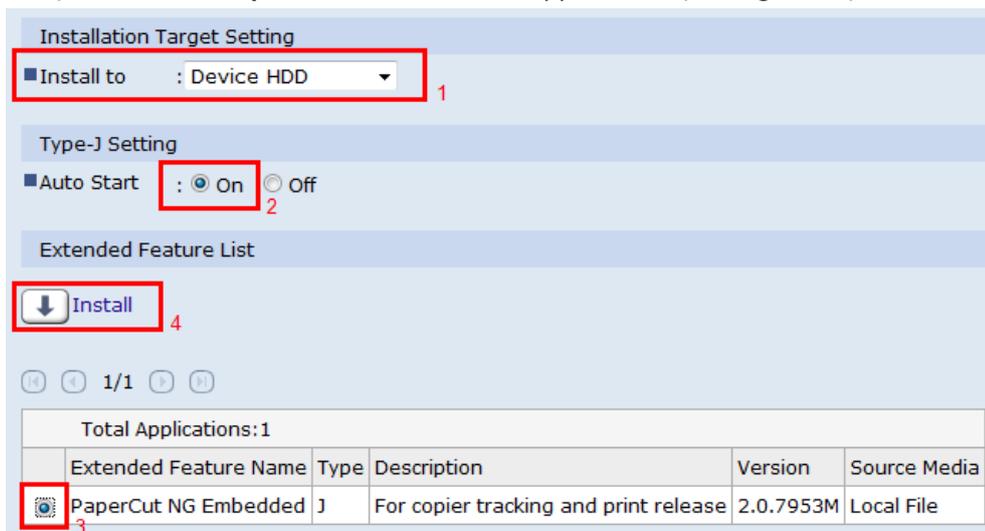


Figure 43: Installing the application.

5. Click **Install**.

6. A confirmation screen will appear. Verify the install options are correct and click **OK**.
7. The application will be installed. You can confirm by selecting **Startup Setting** under **Extended Feature Settings** on the **Configuration** page (see Figure 44).



Selection	Extended Feature Name	Type	Status	Description
<input type="radio"/>	PaperCut	J	Starting Up	For copier tracking and print release

Figure 44: Confirming installation.

If the install settings are incorrect, the application may not work correctly and even may not uninstall. In this case, simply reinstall with the correct install settings.

### 11.1.2 Set the default application and system timeout

The PaperCut embedded application is now installed on the Ricoh MFD. For the application to run effectively it must be configured as the default application and a system reset timeout should be set. This ensures the application is displayed when the MFD is idle or the user is logged out.

To do this:

1. On the MFD, select **User Tools** → **System Settings**.
2. On the **General Features** tab, select the **Function Priority** setting.
3. Select **JavaTM/X** and press **OK**.
4. Select the **Timer Settings** tab.
5. Select the **System Auto Reset Timer** option.
6. Enable the timer by pressing the **On** button and set the timeout to something reasonable (e.g. 30 to 60 seconds). This determines how long the machine (if left untouched) will wait before switching back to the PaperCut application. If it is set too short, it will be annoying for users. If it is set too long and users forget to log out, other users could charge copies to the previous user's account.

### 11.1.3 Start the embedded application

Once the application is installed and configured, it can be started via the **Startup Setting** in Ricoh Web Image Monitor (see section 11.1.1.2).

Alternatively, the embedded application can be started at the MFD itself:

1. Select **User Tools** → **Extended Feature Settings**.
2. On the **Extended Feature Settings** screen, select the **Startup Setting** tab.
3. The running applications are highlighted. To start the PaperCut application, press the **PaperCut** application button.
4. The MFD will display **Please wait** until the application starts.
5. Once started, exit the screens by pressing **Exit** twice.
6. Press the **Other Function** key (below the **Copy/Facsimile** keys on the left). The PaperCut application will then appear (see Figure 45).

- The first time the PaperCut application runs, it prompts for a friendly name to register the MFD in PaperCut (e.g. admin-copier). The name should uniquely identify the MFD on your network. Using the same name as the MFD’s print queue is recommended. Enter the name and press **Save**.

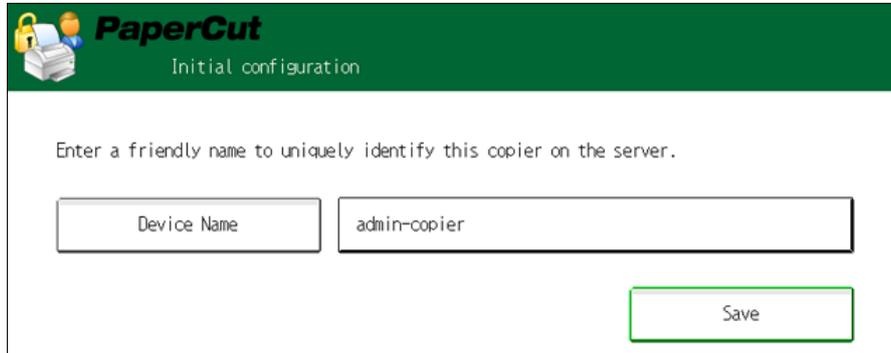


Figure 45: Initial configuration screen on MFDs with SDK 2.

- The PaperCut application then attempts to connect to the PaperCut server. If it successfully connects, you will be presented with the **Welcome** screen (see Figure 46).

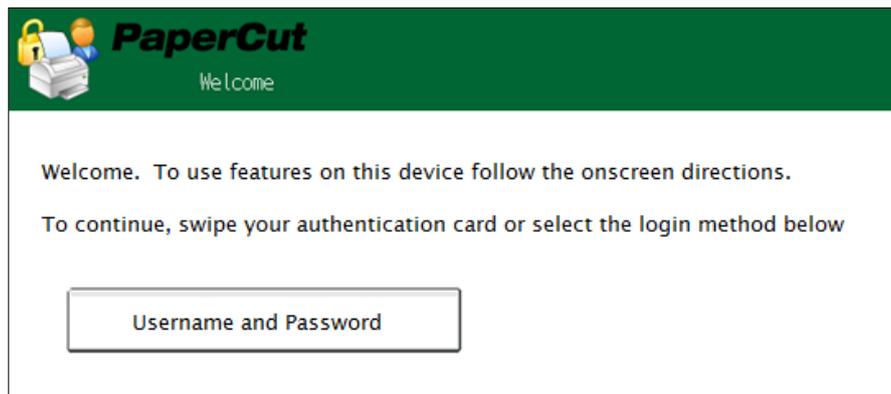


Figure 46: Welcome screen on MFDs with SDK 2.

- The MFD will appear in the PaperCut administration web interface under the **Devices** tab (see Figure 47) with the name you provided in the steps above. It will be created using the cost settings of the [Template printer].

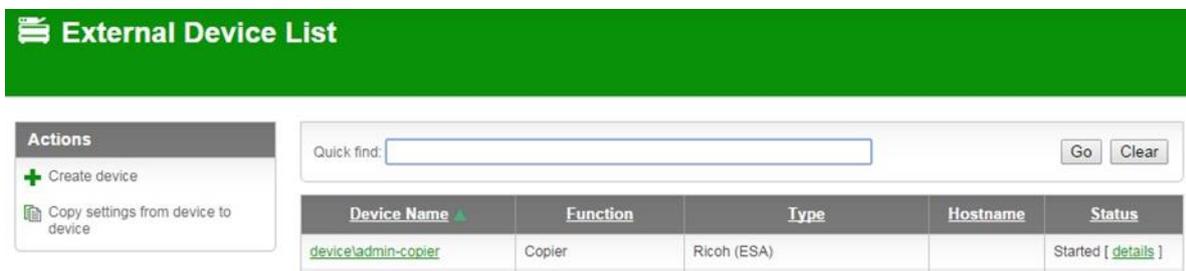


Figure 47: The MFD appearing in the PaperCut administration web interface.

The embedded application is configured to “auto-start” which means that when the MFD is rebooted/restarted, the PaperCut application will start automatically.

The embedded application is now successfully installed. To use the MFD, users must log in to the application, and any copying they perform is logged in PaperCut.

## 11.2 Configuration for MFDs with SDK 2

This section discusses configuration specifically for the SDK 2 application. For general configuration see section 5.

### 11.2.1 Advanced Config editor

The common configuration options for an MFD in PaperCut are available in the MFD'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 **Advanced Config** tab on the **Device Details** page.

Config name	Description
<code>ext-device-msg.copier-enabled-text</code>	<p>The text displayed on the copier enabled screen (the screen where the MFD is ready for use/copying). This can be used to provide specific information about using the MFD. Use <code>\n</code> to create a new line.</p> <p>Default: DEFAULT (uses the default application text)</p>
<code>ext-device-msg.welcome-text</code>	<p>The text displayed on the welcome screen (the screen displayed after the MFD is connected to the PaperCut server). This text can be used to provide specific information about logging in to the MFD. Use <code>\n</code> to create a new line.</p> <p>Default: DEFAULT (uses the default application text).</p>
<code>ext-device.inactivity-timeout-secs</code>	<p>The amount of time (in seconds) to allow users between key presses before they are automatically logged out.</p> <p><b>NOTE:</b> The MFD's System Auto Reset Timer also impacts logout time.</p> <p>Default: 60</p>
<code>ext-device.ricoh.locale</code>	<p>The locale (language setting) for display on the MFD in the form <code>xx</code> or <code>xx_XX</code>, if different to the MFD's locale, e.g. <code>fr</code> for French or <code>zh_HK</code> for Chinese (Hong Kong).</p> <p>Default: DEFAULT (use the MFD's locale)</p>

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<code>ext-device.ricoh.suppress-welcome-screen</code>	This option allows the welcome screen to be suppressed when only a single authentication mode is enabled. Set to Y to suppress the welcome screen. If more than one authentication mode is enabled, this option will have no effect. Default: N
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## 11.2.2 Customizing the header logos and colors

The embedded application has a header at the top of all screens. This header defaults to the PaperCut logo and green color. The header can be customized to match your organization's color scheme and logos.

### 11.2.3 Customized logos

The embedded application header has two header logos (see Figure 48). These logos can be replaced with logos for your organization.



Figure 48: Header logos on MFDs with SDK 2.

This shows the two logos outlined in red. The images are must be saved as 8-bit bitmap (BMP) files with the following sizes:

- Icon logo (`icon-logo.bmp`) – 64 x 64 pixels
- Text logo (`text-logo.bmp`) – 150 x 32 pixels

These images should be saved in the `images` subdirectory of the application prior to installation (see Figure 49).

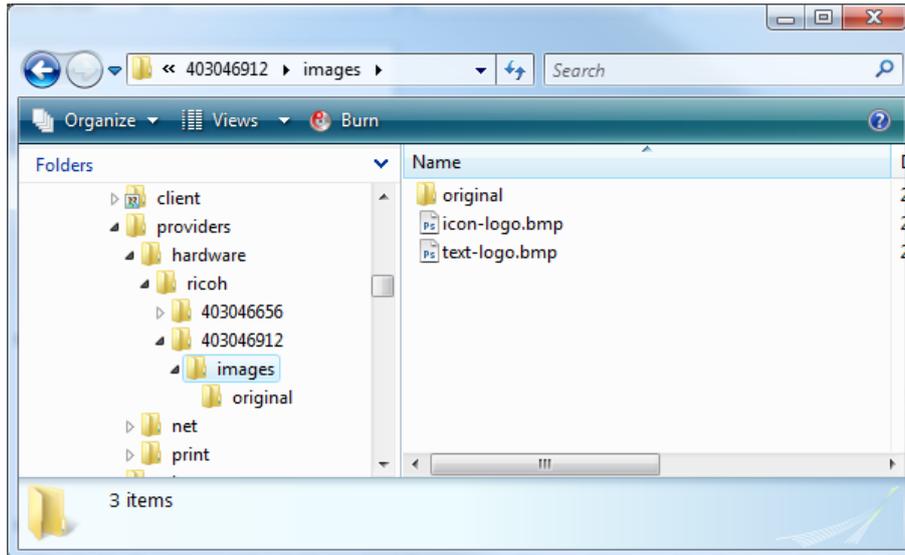


Figure 49: Images folder.

#### 11.2.4 Custom header color

The header colors are defined in the `config.properties` file of the embedded application directory. Use a text editor to edit this file prior to installing the application. The settings that define the colors are:

- `header-background-color` – the background color (defaults to green: `#006633`)
- `header-font-color` – the title text color (defaults to white: `#FFFFFF`)

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.

**NOTE:** Ricoh MFDs have a limited color palette (216 colors) and will round the colors to the “closest” color. It is recommended to use one of the following hexadecimal color values for each color component: `00`, `33`, `66`, `99`, `CC`, `FF`.