

PaperCut MF - Ricoh SmartSDK Embedded Manual

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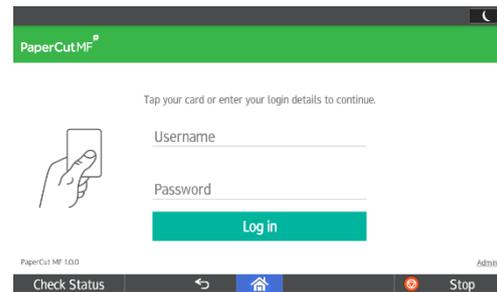
1 Version history

| PaperCut MF version or date | Details |
|-----------------------------|--|
| 23 November 2018 | 8.3 Swipe card authentication; 9.2 Connecting supported card readers |
| 18.2.0 | 2 Which version do I install?; 3 Overview; 4 Installation; 5 Upgrading to a newer version; 6 Post-install testing; 7 Configuration; 8 Advanced configuration |

2 Which version do I install?



SDK/J



SmartSDK

2.1 Required panel

PaperCut's Ricoh SmartSDK application requires a device with a second-generation Smart Operation Panel. These panels run Android and have no hard keys (see Figure 1). If your device has a different panel, refer to the PaperCut MF - Ricoh SDK/J Embedded Manual to determine if your device meets the requirements of PaperCut's Ricoh SDK/J application.



Figure 1: Second-generation Smart Operation Panel

2.2 Application feature comparison

If your device has a second-generation Smart Operation Panel, refer to the following table to help determine which application to install.

| Feature | SDK/J | SmartSDK |
|--|----------------|----------------|
| Integrate with GlobalScan NX | ✓ ¹ | ✓ ² |
| Track GlobalScan NX jobs | ✗ | ✓ |
| Multi-select when releasing print jobs | ✗ | ✓ |
| Change the settings of held print jobs | ✗ | ✓ |
| Track USB printing | ✗ | ✓ |
| Support external USB keyboard | ✗ | ✓ |
| Run natively in Android | ✗ | ✓ |
| Zero stop for native scanning and faxing | ✓ | ✗ ³ |
| Offline mode | ✓ | ✗ ⁴ |

¹ The application does not integrate with the GlobalScan NX SmartSDK application.

² The application does not integrate with the GlobalScan NX SDK/J application.

³ If the user's credit runs out while scanning or faxing, the user will be logged out when the job is completed.

⁴ Use a Site Server to minimize outages due to network failures.

3 Overview

This manual provides an overview of the installation, configuration, and operation of PaperCut's embedded software solution for Ricoh MFDs (Multi-Function Devices) with SmartSDK. For general documentation on PaperCut MF see the [PaperCut MF manual](#) (also available as online help in the PaperCut MF Admin web interface).

3.1 The solution

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
- Changing and viewing the settings of held print jobs at the device

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

3.1.1 Consistency

The PaperCut software development team develops the embedded solutions in-house. This ensures that the copier interface is consistent with the workstation print interface, meaning users only need to learn one system.

3.1.2 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 MF Application Server using a Service Oriented Architecture (SOA) and web-services-based protocols.

3.1.3 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.

3.1.4 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.

3.1.5 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.

3.2 Support

Contact your reseller or Authorized Solution Center if you require assistance. You can find contact information on the **About** page in the PaperCut MF Admin web interface.

4 Installation

This section covers the installation of the PaperCut MF 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](#)).

4.1 Supported models

PaperCut supports Ricoh MFDs with Embedded Software Architecture (ESA) SmartSDK version 2.10 or later. For the latest list of supported models, see <http://papercut.com/ricoh#supported>.

4.1.1 Integrated Scanning

The PaperCut embedded application includes Integrated Scanning, which you can optionally enable per MFD. Integrated Scanning is not available on wide-format models.

4.2 Requirements

Before installing the PaperCut embedded application on to the MFD, ensure that basic monitoring of network printing has been set up and tested for this MFD. The MFD should show up in the printer list in the PaperCut MF Admin web interface and have a few print jobs in its print history.

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

- The Ricoh MFD is listed as a supported model (see 4.1 Supported models).
- The version of the PaperCut MF Application Server is 18.0.1 or later.
- No applications are installed that use the custom authentication functionality provided by Ricoh. Multiple custom authentication applications conflict with each other and cause unpredictable behavior.
- You have the following information available:
 - the fully-qualified hostname or IP address of the PaperCut MF Application Server
 - the network address of the MFD — a static IP address is recommended
- A Ricoh technician might be needed to set system parameters (see 4.3.4.1 Configure custom authentication).
- Verify that firewalls or other network restrictions don't prevent the MFD's access to the PaperCut MF Application Server on its HTTPS port, and port 51443 for the Remote Operation Client.

4.3 Setup procedure

This section describes installing PaperCut's SmartSDK solution on compatible Ricoh MFDs.

4.3.1 Enable external hardware integration

1. Log in to the PaperCut MF Admin web interface (e.g. <https://papercut-server:9192/admin>) using a web browser.
2. Navigate to **Options** → **Advanced** and ensure **Enable external hardware integration** is selected.
3. Click **Apply**.

4.3.2 Verify administrator access via Ricoh Web Image Monitor

Ricoh MFDs have an embedded web server that provides an alternate administration interface. To verify administrator access via Ricoh Web Image Monitor:

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 machine administrator username and password (default is admin with no password), then click **Login**.
5. Select **Device Management** → **Configuration**.

4.3.3 Configure the MFD via the Remote Operation Client

The Remote Operation Client is available to remotely manage your Ricoh MFDs and is installed with the PaperCut MF Application Server.

4.3.3.1 Launch the Remote Operation Client

To launch the Remote Operation Client:

1. On the PaperCut MF Application Server, open the following directory:
`<app-dir>\providers\hardware\ricoh\remote-operation-client`
2. Launch the Remote Operation Client:
 - a. If in a Windows environment, open a command prompt with administrator privileges and run `remote-operation-client.bat`
 - b. If in a UNIX environment, launch the terminal and run:
`sudo ./remote-operation-client`

Once launched, the window in Figure 2 will be displayed.

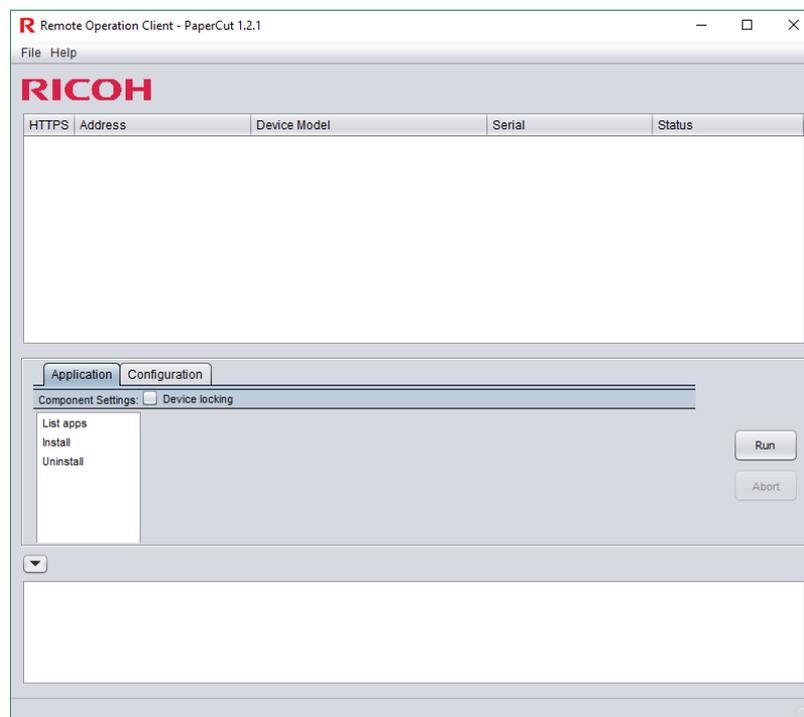


Figure 2: Remote Operation Client

4.3.3.2 Add the required MFD

Before you can manage the MFD, add it to the Remote Operation Client.

1. In the Remote Operation Client window, select **File** → **Add** and specify the IP address or hostname and administrator credentials for the MFD, then click **OK**. Repeat for each MFD.
2. Select the required MFDs in the list of devices.
3. Right-click the list, then select **Initialize** to retrieve the details of the selected MFDs and confirm they can be managed. If the device model and serial number are populated and there are no errors in the output display, then the initialization was successful.

4.3.3.3 Configure the MFD

To configure the MFD to allow PaperCut MF to function properly, in the Remote Operation Client:

1. Select the required MFDs in the list of devices.
2. On the **Configuration** tab:
 - a. Select **Configure for SmartSDK**.
 - b. Click **Run**. This may take some time to complete. Once completed the output display shows the line **Successfully configured for SmartSDK** for each selected device.
3. As there is some configuration that the Remote Operation Client is unable to perform, the following configuration steps will need to be performed at the MFD or via Ricoh Web Image Monitor:
 - a. Step 2.b in 4.3.4.2 Configure permissions
 - b. All steps in 4.3.4.4 Configure inactivity detection
 - c. Steps 2 and 3 in 4.3.4.6 Configure control of usage, part 1

If you have successfully completed the steps in this section, then proceed to section 4.3.5 Install the application, otherwise you may need to configure the MFD without the Remote Operation Client (see the next section).

4.3.4 Configure the MFD without the Remote Operation Client, part 1

You can also perform the MFD configuration required to allow PaperCut MF to function properly, at the MFD or via Ricoh Web Image monitor instead of using the Remote Operation Client.

4.3.4.1 Configure custom authentication

Custom authentication settings allow PaperCut MF to be the authentication application.

Set the system parameters as follows:

Optional Counter Type, External Optional Counter Type → 0
Access Control, SDK Certification Device, bit 0 → 1
MF KeyCard, Job Permit Setting → 1

4.3.4.2 Configure permissions

Configure administrator and user permissions:

1. Either at the MFD under **User Tools** → **System Settings** → **Administrator Tools** → **Administrator Authentication Management** or via Ricoh Web Image Monitor under **Device Management** → **Configuration** → **Administrator Authentication Management**, for each of **User Management**, **Machine Management**, **Network Management** and **File Management**:
 - a. Set it to **On**.

- b. Select all available settings.
2. Either at the MFD under **User Tools** → **System Settings** → **Administrator Tools** → **User Authentication Management**, or via Ricoh Web Image Monitor under **Device Management** → **Configuration** → **User Authentication Management**:
 - a. Select **Custom Authentication**.
 - b. Under **Available Functions**, deselect all **Copier**, **Printer** and **Other Function(s)**.

4.3.4.3 Configure the address book

New users are added to the address book when using device functions. The address book needs to remove the oldest user if it is full. Either at the MFD under **User Tools** → **System Settings** → **Administrator Tools** or via Ricoh Web Image Monitor under **Device Management** → **Address Book** → **Maintenance**, set **Auto Delete User in Address Book** to **On**.

4.3.4.4 Configure inactivity detection

Configure inactivity detection either at the MFD under **User Tools** → **System Settings** → **Timer Settings** or via Ricoh Web Image Monitor under **Device Management** → **Configuration** → **Timer**:

1. Use the **System Auto Reset Timer** to detect inactivity and log the user out. To avoid the application going to the background when this timer elapses, also set the **Function Priority** to **PaperCut MF** (configured at the MFD under **User Tools** → **Screen Features** → **Screen Device Settings** → **Function Priority**).
2. Disable the **Auto Logout Timer**. The user will be logged out when this timer elapses, but it is only active while using device functions or Integrated Scanning.

Note that the user will also be logged out if the **Sleep Timer** elapses.

4.3.4.5 Configure the scanner

Configure the scanner to avoid it failing when its journal is full. Either at the MFD under **User Tools** → **Scanner Features** → **General Settings** or via Ricoh Web Image Monitor under **Device Management** → **Configuration** → **Scanner** → **General Settings**, set **Print & Delete Scanner Journal** to **Do not Print: Delete Oldest**.

4.3.4.6 Configure control of usage, part 1

Configure control of printing and copying (part 1):

1. Either at the MFD under **User Tools** → **System Settings** → **Administrator Tools** or via Ricoh Web Image Monitor (**Print Volume Use Limitation**), set **Machine Action When Limit Is Reached** to **Stop Job**.
2. Either at the MFD under **User Tools** → **System Settings** → **Administrator Tools** → **Print Volume Use Limitation: Unit Count Setting** or via Ricoh Web Image Monitor under **Device Management** → **Configuration** → **Print Volume Use Limitation**:
 - a. Set **Copier: Color** to 0.
 - b. Set **Copier: Black & White** to 0.
 - c. Set **Printer: Color** to 0.
 - d. Set **Printer: Black & White** to 0.
3. At the MFD under **User Tools** → **System Settings** → **Administrator Tools**, set **Print Volume Use Limitation: Default Limit** to 0.

Part 2 of MFD configuration (see 4.3.7 Configure the MFD without the Remote Operation Client, part 2) requires the application to be installed and configured, as well as a user logging in and using device functions.

4.3.5 Install the application

To install the PaperCut MF application in the Remote Operation Client:

1. Select the required MFDs in the device list.
2. On the **Application** tab:
 - a. Select **Install**.
 - b. Click the **Browse** button.
 - c. Specify the embedded application ZIP file, located in `<app-dir>\providers\hardware\ricoh\smartsdk`.
 - d. Click **Run**.

4.3.6 Start and configure the application

Once the application is installed, it is ready to be started and configured at the MFD.

The application can be started by either of the following methods:

1. When the panel powers on or resumes from sleep mode, the PaperCut MF application automatically launches (there may be a few seconds delay where the Ricoh home screen will still be visible).
2. After the PaperCut MF application has been added to the Ricoh home screen (see 4.3.6.2 Add the application icon), you can launch it via the **PaperCut MF** icon.

4.3.6.1 Log in to the MFD as the machine administrator

The first time the PaperCut MF application runs, it will prompt for configuration information. To access this configuration screen, you must be logged in to the MFD as the machine administrator. If you are not logged in as the machine administrator, you will see the screen in Figure 3 when PaperCut MF starts.

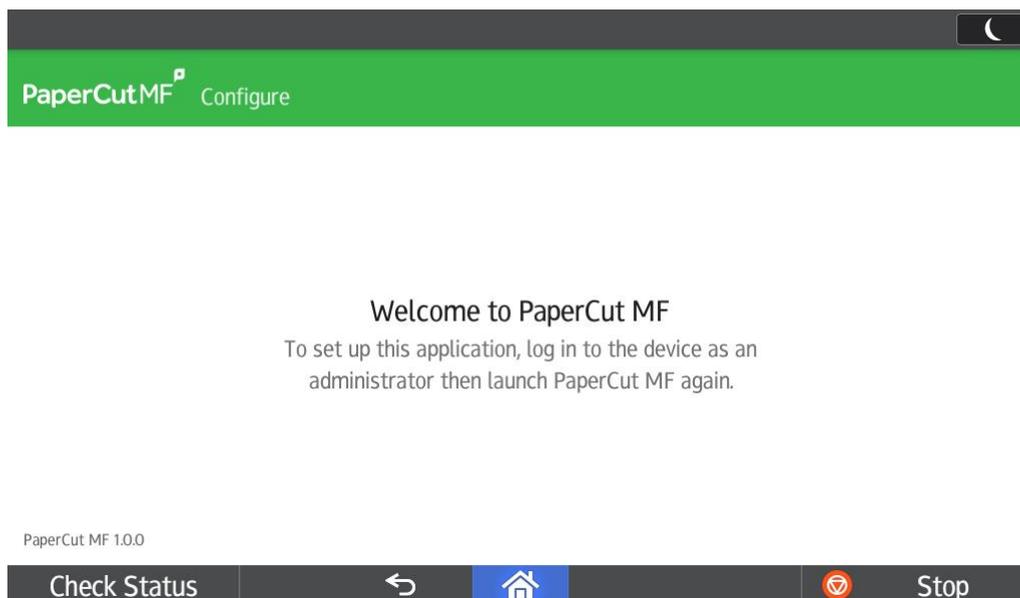


Figure 3: Configure screen when not logged in as the machine administrator

To log in as the machine administrator:

1. Press the home button on the panel to go to the Ricoh home screen.
2. Press the **User Tools** icon to display the menu.
3. Select **Machine Features**.
4. On the **User Tools** screen, press the **Login** button.
5. On the dialog, press **Login**.
6. Enter the machine administrator username then press **OK**.
7. Enter the password then press **OK**.
8. On the **User Tools** screen, press the **Exit** button.
9. To return to the Ricoh home screen, press either the back or home button to exit the **User Tools** menu.

4.3.6.2 Add the application icon

While logged in as the machine administrator, add the application icon to the Ricoh home screen:

1. Press the all apps icon from the home screen.



Figure 4: All apps icon

2. From the apps screen, press and hold the **PaperCut MF** icon until the screen switches to the home screen.

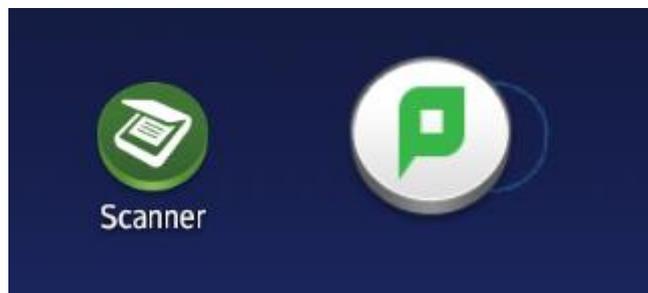


Figure 5: Adding the PaperCut MF icon

3. Drag the icon to a place on the home screen, then release it to save the position.

4.3.6.3 Configure the application

While logged in as the machine administrator, configure the application:

1. Launch the PaperCut MF application from the home screen and it will prompt for configuration information:
 - **Device name** — the unique name for the MFD as it will be registered in PaperCut MF.
 - **Server hostname/IP** — the IP or network address of the PaperCut MF Application Server.
If using a hostname, make sure it is fully-qualified so it can be correctly resolved.
 - **Port** — the port used to communicate with the PaperCut MF Application Server. This should be the HTTPS port (9192 by default).

2. Press **Save changes** to save the new settings.
The PaperCut MF application then attempts to connect to the PaperCut MF Application Server.
3. If you are asked whether you want to accept the server's certificate, press **Accept certificate** if the SHA-1 fingerprint matches that of the server's certificate. For steps on how to view the server's certificate, see the Troubleshooting SSL section of the [PaperCut MF manual](#).
Once the application successfully connects, the login screen is displayed.

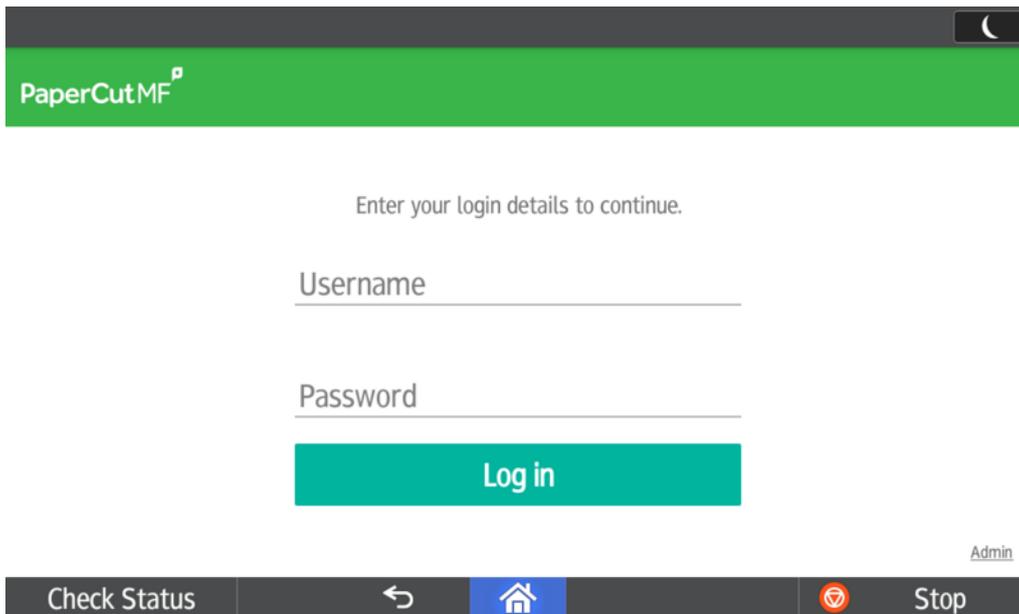


Figure 6: Login screen

The MFD is displayed in the PaperCut MF Admin web interface under the **External Device List** tab on the **Devices** page with the name you provided in the steps above. It will be created using the cost settings of the [Template printer].

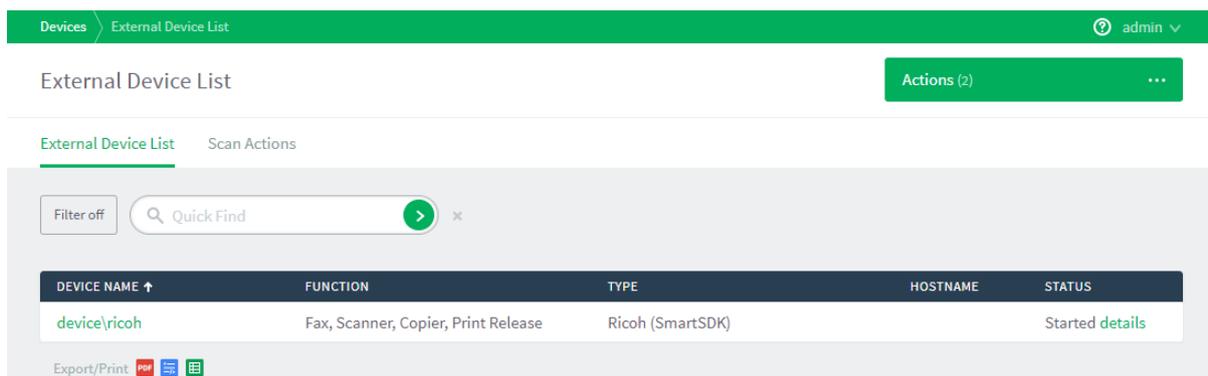


Figure 7: MFD appearing in the PaperCut MF Admin web interface

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.

4.3.7 Configure the MFD without the Remote Operation Client, part 2

This step is only required if the steps in section 4.3.3.3 Configure the MFD, have not successfully been performed. Before performing the following steps, you need to log in to the embedded application as a PaperCut user, access device functions, and then log out.

4.3.7.1 Configure control of usage, part 2

Either at the MFD under **User Tools** → **System Settings** → **Administrator Tools** → **Enhanced Print Volume Use Limitation** or via Ricoh Web Image Monitor under **Device Management** → **Configuration** → **Print Volume Use Limitation**:

1. Set **Tracking Permission** to **On**.
2. Set **Stop Printing** to **On**.

4.3.8 Set up optional additional network security

The MFD communicates with the PaperCut MF Application Server over the network (e.g. to authenticate users or release print jobs). To provide an additional level of security, PaperCut can be configured to allow device connections only from a restricted range of network addresses. This ensures that only approved devices are connected to the PaperCut MF Application 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 MF Admin web interface at `https://<papercut-server>:9192/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 MF Application Server.

4.4 Bypassing PaperCut MF

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

- Change the MFD's machine administrator password and always keep it secure.
- Securely connect the power and network cable. PaperCut is designed to be robust and record MFD usage if power is lost during copying, but it may be possible to start copying before the embedded application starts after rebooting the MFD.

To allow for uncontrolled access, you can disable custom authentication: either at the MFD under **User Tools** → **System Settings** → **Administrator Tools** → **User Authentication Management**, or via Ricoh Web Image Monitor under **Device Management** → **Configuration** → **User Authentication Management**, select **Off**.

To completely uninstall the embedded application, in the Remote Operation Client:

1. Select the MFD's entry in the table.
2. Select **Uninstall** from the **Application** tab, specify the product ID as 1711276062 then click **Run**.

After uninstalling the application, you will also need to manually undo the configuration (see 4.3.7 Configure the MFD without the Remote Operation Client, part 2 and 4.3.4 Configure the MFD without the Remote Operation Client, part 1) and then reboot the MFD. If the MFD was configured via the Remote Operation Client, you can also uninstall `rxconfServlet` (product ID 33817035) and `rxspServlet` (product ID 33817044).

5 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 (see 4.3.5 Install the application).

Note: This only applies to version 1.0.9 and later (see 9.9 Upgrading from 1.0.8).

Installing the application over the top of the existing installation will upgrade the application and keep all your configuration settings. Before upgrading, ensure that the device is connected to the PaperCut MF Application Server. After upgrading, it's worth quickly checking that the embedded application's version number now matches the expected value.

6 Post-install testing

After completing installation and basic configuration, testing of the common usage scenarios is recommended. 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 MF and the embedded application.

This section outlines test scenarios that are applicable for most organizations.

6.1 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 MF Admin 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 8).

Account Details

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.

Balance

\$50.00 (adjust)

Restricted

Overdraft

Use default overdraft (\$0.00) ▾

Figure 8: 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 9).

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

Warning: This setting requires this user to run the client software at all times.

Figure 9: Allowing the user to select an account

4. Click **OK** to save.

6.2 Test scenarios

Three common test scenarios are included: standard copying, copying with account selection, and print release. Complete all the test scenarios relevant to your site.

6.2.1 Scenario 1: Standard copying

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

At the MFD:

1. On the login screen, enter the testusersimple username and password and press **Log in**.
2. On the account confirmation screen (Figure 10), press **Use device functions**.

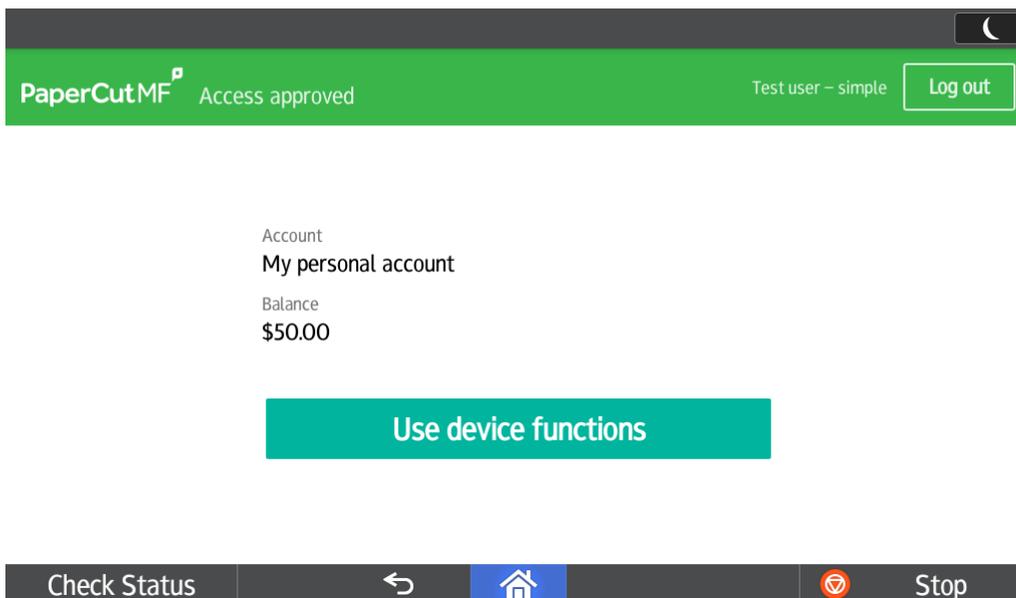


Figure 10: Account confirmation screen

The MFD is now enabled for use.

3. Perform some test copying.
4. Once you have completed copying, press **Logout**.

Verify that the copying was recorded and the user's account deducted:

1. In the PaperCut MF Admin web interface, select the MFD from the **Devices** page.
2. Click the **Job Log** tab.

This page lists all recent copying activity on the MFD. The copying just performed as the test user should be listed.

| DATE ↓ | USER | CHARGED TO | PAGES | COST | DOCUMENT NAME | ATTRIBS. | STATUS |
|-------------------------|----------------|----------------|-----------------|--------|---------------|---|------------------------|
| Sep 15, 2017 1:34:31 PM | testusersimple | testusersimple | 2 (Color: 0) | \$0.20 | [copying] | A4 (ISO_A4) Duplex: No Grayscale: Yes | Printed refund edit |

Figure 11: Job Log

3. Verify the details of the copy job that was just performed.
4. Click the user's name in the **User** column to view the user's account details.
5. On the **User Details** page, click the **Job Log** tab to display all print/copy activity for the user.
6. Click the **Transaction History** tab.
7. Verify that the cost of the copying was deducted from the user's account.

| TRANSACTION DATE ↓ | TRANSACTIONED BY | AMOUNT | BALANCE AFTER | TRANSACTION TYPE |
|-------------------------|------------------|---------|---------------|-------------------|
| Sep 15, 2017 1:34:31 PM | [system] | -\$0.20 | \$49.80 | Printer Usage |
| Sep 15, 2017 1:28:04 PM | admin | \$50.00 | \$50.00 | Manual adjustment |

Figure 12: Transaction History

6.2.2 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 MF Admin web interface, select the **Accounts** page.
2. In the **Actions** menu, select **Create a new account**.
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 login screen, enter the testuseradvanced username and password then press **Log in**.
The screen will display the account selection options.
2. Select the account to allocate copying to, e.g. **Test account 1**.

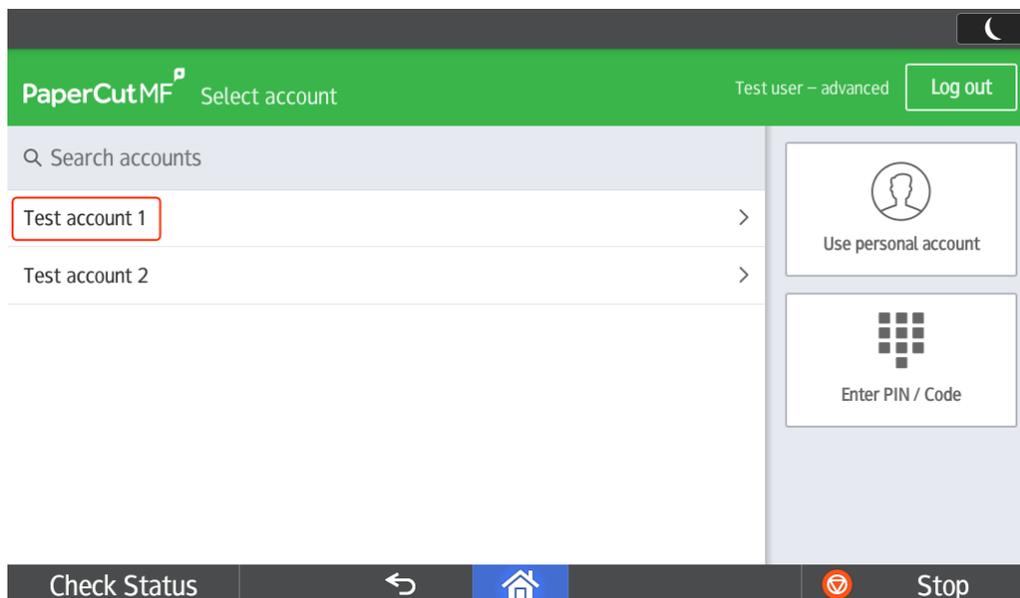


Figure 13: Selecting an account

3. On the **Access approved** screen, press **Use device functions**.
4. The MFD is now enabled for usage. Perform some test copying. Once you have completed copying, press **Logout**.

Verify that the MFD activity was recorded and the user's account deducted:

1. In the PaperCut MF Admin web interface, select the MFD from the **Devices** page.
2. Select the **Job Log** tab. This page lists 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. Select the **Job Log** tab.
A list of all print/copy activity for the account is displayed, and will show the test copying that was performed.

6.2.3 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, see the Hold/Release Queues & Print Release Stations chapter of the [PaperCut MF manual](#).

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

1. In the PaperCut MF Admin 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.

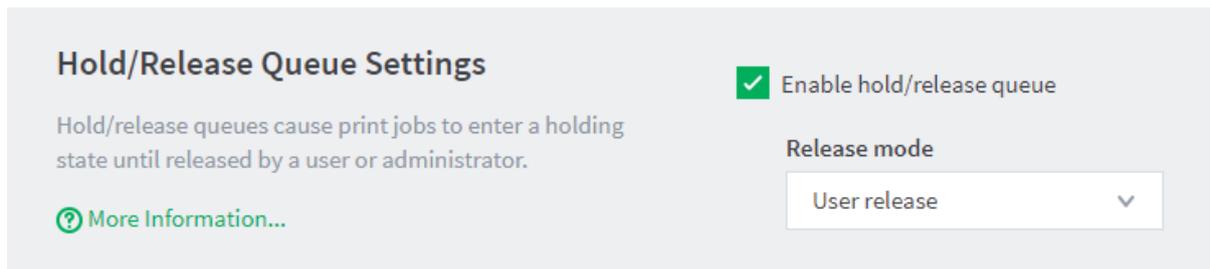


Figure 14: Enabling print release for the print queue

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

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

1. In the PaperCut MF Admin web interface, select the **Devices** page.
2. Select the MFD you will use.
3. Under **Print release**, 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.

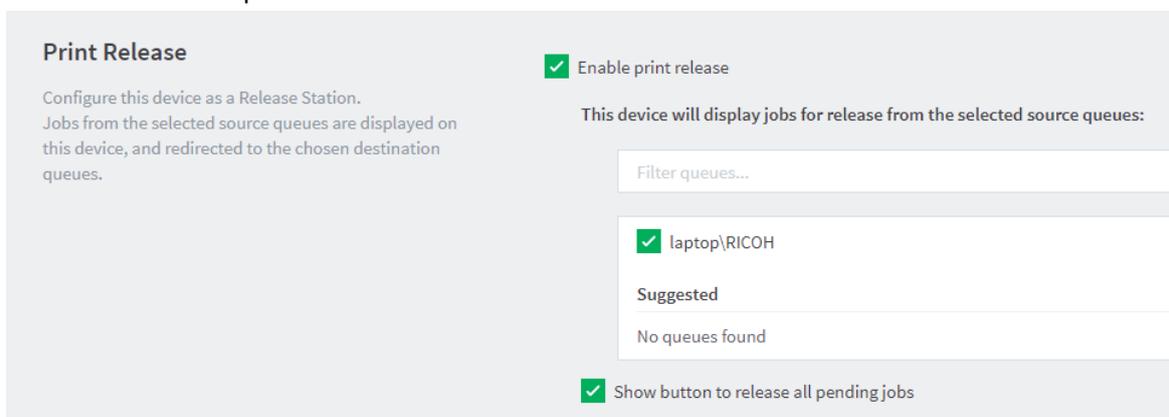


Figure 15: Enabling print release for the MFD

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 MF Admin 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 login screen, enter the `testusersimple` username and password and press **Log in**.
2. Select **Print release**.
3. Verify that print jobs for `testusersimple` are being held and displayed (see Figure 16):

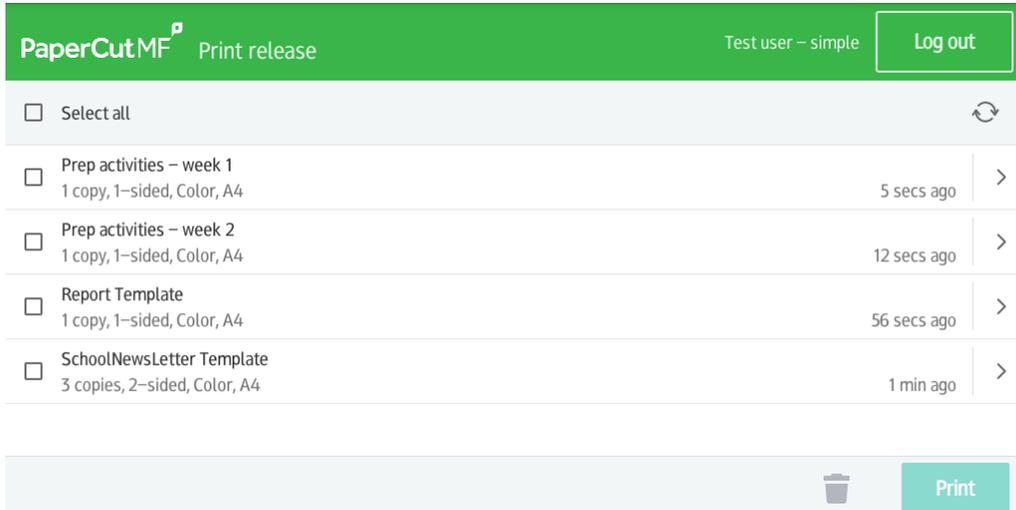


Figure 16: Print release screen (with all held print jobs)

Note: You may be able to change the settings of held print jobs on the PaperCut MF Print Release screen before releasing them. For more information, see 7.1.4 Held print job settings at the device.

4. To release one or many held print jobs at once, select all the relevant held print jobs and click **Print**.
5. Verify that the selected held print jobs are released and printed by the device.
6. To delete one or many held print jobs at once, select all the relevant held print jobs and click the **Bin** icon.
7. To view and take actions on a single held print job, click the **chevron**:



Details of the held print job are displayed (see Figure 17: Print release screen):

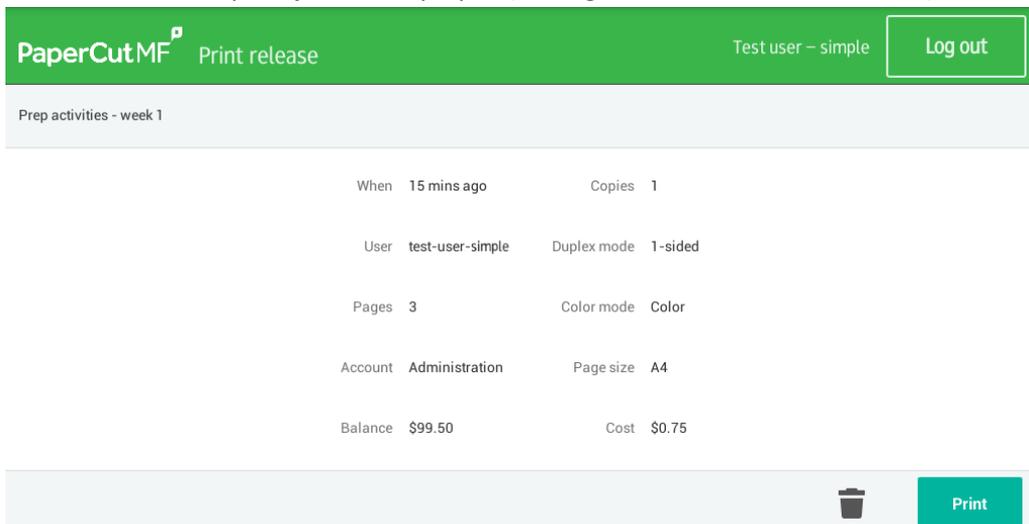


Figure 17: Print release screen (with settings of a single held print job)

Note: You may be able to change the settings of held print jobs on the PaperCut MF Print Release screen before releasing them. For more information, see 7.1.4 Held print job settings at the device.

7 Configuration

After completing installation and registering the MFD with PaperCut, it will be configured with reasonable default settings that are suitable for most environments. This section covers how to change the default settings.

7.1 Device details

The settings in this section are in the PaperCut MF Admin web interface 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 8.1 Config Editor.

7.1.1 Authentication methods

PaperCut MF supports several 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](#).

7.1.2 Tracking

The **Tracking** settings in the **Summary** tab for the MFD define which functions will be available on the MFD and how the MFD will be used.

Each function is discussed in the following table.

| Function | Description |
|--------------------------|--|
| Track & control copying | The MFD tracks copying and USB printing. |
| Track & control scanning | The MFD tracks scanning. |
| Track & control faxing | The MFD tracks faxing. |

7.1.3 Print release

The MFD performs as a print release station when you enable print release in the **Summary** tab. Print release configuration is documented in the Copier Integration chapter of the [PaperCut MF manual](#).

7.1.4 Held print job settings at the device

PaperCut MF allows you to configure the following:

- 7.1.4.1 Held print jobs settings that can be changed at the device
- 7.1.4.2 Held print jobs settings that can be viewed at the device

7.1.4.1 Held print jobs settings that can be changed at the device

PaperCut MF allows users to change the settings of held print jobs on the device. Based on the changes made, PaperCut MF shows the updated cost and savings, to give immediate positive feedback to the user, encouraging behavior change.

Users can make the following changes to print settings for multiple jobs on the device:

- **Force grayscale** (from color to grayscale)
- **Force 2-sided** (from 1-sided to 2-sided)

The screenshot shows the PaperCut MF Print release interface. At the top, there is a green header with the PaperCut MF logo, the text "Print release", the user name "Test user - simple", and a "Log out" button. Below the header is a list of held print jobs, each with a checkbox, a job name, details, a timestamp, and a chevron icon. At the bottom, there are two checkboxes for "Force grayscale" and "Force 2-sided", a trash icon, and a "Print" button.

| Job Name | Details | Timestamp |
|--|------------------------------|---------------|
| <input type="checkbox"/> Select all | | |
| <input type="checkbox"/> Prep activities - week 1 | 1 copy, 1-sided, Color, A4 | 5 secs ago > |
| <input type="checkbox"/> Prep activities - week 2 | 1 copy, 1-sided, Color, A4 | 12 secs ago > |
| <input type="checkbox"/> Report Template | 1 copy, 1-sided, Color, A4 | 56 secs ago > |
| <input type="checkbox"/> SchoolNewsLetter Template | 3 copies, 2-sided, Color, A4 | 1 min ago > |

Control options: Force grayscale Force 2-sided **Print**

Clicking the chevron of a held print job displays all the settings for the individual job, allowing users to make the following additional changes:

- **Copies**
- **Duplex mode** (from 1-sided to 2-sided)
- **Color mode** (from color to grayscale)
- **Account**

PaperCut MF[®] Print release Test user – simple Log out

Prep activities – week 1

When 47 secs ago Copies – 1 +

User test-user-simple Duplex mode 1-sided 2-sided

Pages 3 Color mode Color Grayscale

Account Administration  Page size A4

Balance \$82.75 Cost \$0.14

Reset to original  Print

If required, you can however, prevent users from being able to change print settings on the device. For more information, see the [PaperCut MF manual](#)

7.1.4.2 Held print jobs settings that can be viewed at the device

By default, PaperCut MF displays the following print settings for individual jobs on the device:

- **Account**
- **Balance**
- **Cost**

PaperCut MF also displays the total cost for multiple jobs on the device.

If required, you can however, prevent users from being able to view print settings on the device. For more information, see the [PaperCut MF manual](#)

7.1.5 Restricting color copying

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

7.2 Shared accounts

Shared accounts (configured in the PaperCut MF Admin web interface) apply throughout PaperCut and are not specific to the MFD.

7.2.1 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.

7.3 Connection details

The **Configure** screen on the MFD allows the administrator to change the PaperCut MF Application Server or the MFD's name.

To access the **Configure** screen, ensure you are logged in to the MFD as the machine administrator (see 4.3.6.1 Log in to the MFD as the machine administrator) and then press the **Admin** link in the lower-right corner of the login screen (see Figure 18).

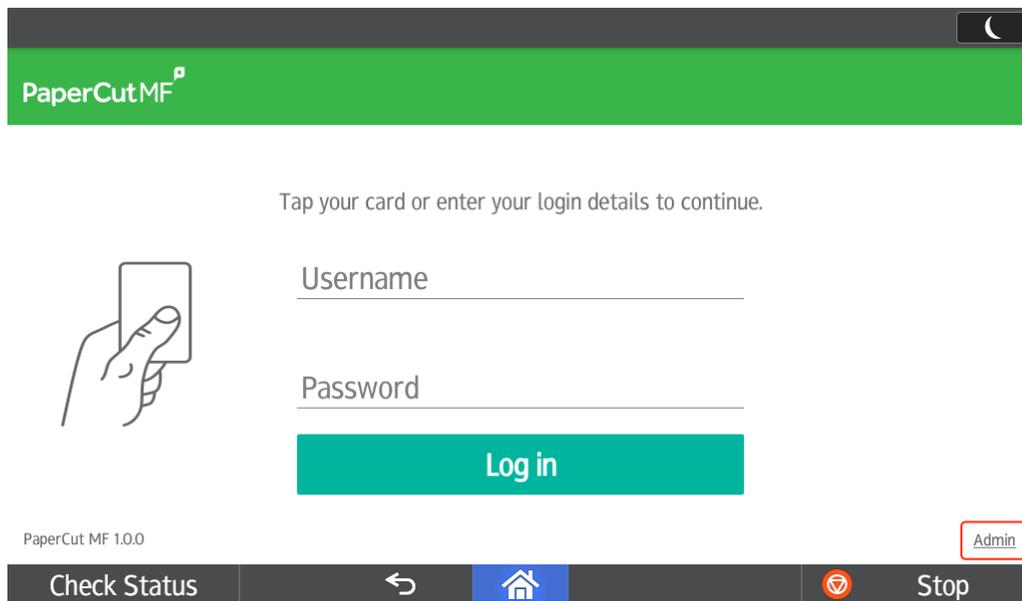


Figure 18: Admin link on the login screen

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

8 Advanced configuration

8.1 Config Editor

The common configuration options for an MFD in PaperCut MF are available in its **Summary** tab, and are discussed in more detail in section 7 Configuration. 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 and description

`ext-device-msg.welcome-text`

See 8.2 Customizing the application.

Default: DEFAULT (the default application text)

`ext-device.block-release-on-error.snmp-error-list`

Defines the error types that will block the release of jobs from the MFD Print Release. The error types include:

lowPaper, noPaper, lowToner, noToner, doorOpen, jammed, offline, serviceRequested, inputTrayMissing, outputTrayMissing, markerSupplyMissing, outputNearFull, outputFull, inputTrayEmpty, overduePreventMaint

Values: Any one or a comma-separated combination of the above error types.

Default: DEFAULT (noPaper, doorOpen, jammed, offline, inputTrayMissing, outputTrayMissing, markerSupplyMissing, outputFull)

`ext-device.card-no-converter`

See 8.3.3 Format conversion.

Default: GLOBAL (defer to the global configuration)

`ext-device.card-no-regex`

See 8.3.2 Regular expression filter.

Default: GLOBAL (defer to the global configuration)

`ext-device.card-self-association.use-secondary-card-number`

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.

Set to Y to use the secondary card number, N to use the primary card number.

Default: GLOBAL (defer to the global configuration)

`ext-device.ricoh.aaa.enabled`

See 8.5 Adaptable Authentication API (AAA).

Default: Y

`ext-device.ricoh.accent-color`

See 8.2 Customizing the application.

Default: DEFAULT (the default color)

`ext-device.ricoh.account-confirm.auto-switch.seconds`

If account confirmation is enabled, the amount of time the account confirmation screen is displayed before switching to the Ricoh home screen.

Set to 0 to disable the auto-switch.

Default: DEFAULT (8 seconds)

`ext-device.ricoh.card-reader.allow-sleep`

Set to Y to allow the panel to enter sleep mode while swipe card authentication is enabled (see 8.3 Swipe card authentication).

Default: N (prevent sleep mode)

`ext-device.ricoh.guest-access.label`

Customize the text of the **Guest** button that appears on the PaperCut MF Login screen (see 8.2.4 Guest access button).

Default: DEFAULT (Guest)

`ext-device.ricoh.ice.jobs.incomplete-list`

This key is used internally when tracking Ricoh ICE Print Cloud print jobs (see 8.6 ICE Print Cloud print jobs).

Note: Modify this ONLY if requested by your PaperCut reseller or Authorized Solution Center.

`ext-device.ricoh.ice.jobs.timestamp`

This key is used internally when tracking Ricoh ICE Print Cloud print jobs (see 8.6 ICE Print Cloud print jobs).

Note: Modify this ONLY if requested by your PaperCut reseller or Authorized Solution Center.

`ext-device.ricoh.ice.log-jobs`

Set to Y to enable Ricoh ICE Print Cloud print job tracking (see 8.6 ICE Print Cloud print jobs).

Default: N (disabled)

`ext-device.ricoh.ice.unknown-username`

The user that will be associated with a Ricoh ICE Print Cloud print job (see 8.6 ICE Print Cloud print jobs) if no user was logged in at the time of the job.

Default: unknown

`ext-device.ricoh.limit-reference.duplex`

The duplex / simplex attribute of the reference page that will be used as a benchmark while determining the cost of other copy / scan / fax jobs.

Values: Y (Duplex), N (Simplex)

Default: N

`ext-device.ricoh.limit-reference.paper-size`

The paper size of the reference page that will be used as a benchmark while determining the cost of other copy / scan / fax jobs.

Default: A4

`ext-device.ricoh.locale`

The locale for display on the MFD, if different to the MFD's locale.

Values: xx (language) or xx_XX (language_region), e.g. fr (French) or en_US (US English).

Default: DEFAULT (MFD's locale)

`ext-device.ricoh.permission-product-ids`

The comma-separated list of product IDs for SDK/J applications that are permitted to be used only when users are logged in.

Default: DEFAULT (no SDK/J applications)

`ext-device.ricoh.primary-color`

See 8.2 Customizing the application.

Default: DEFAULT (the default color)

`ext-device.ricoh.release-show-cost`

Set to N to not show job costs in print release screens.

Default: Y

Note: Setting this to N also hides the account balance and does not display the savings based on other changes made to held print job settings. For more information, see 7.1.4 Held print job settings at the device.

`ext-device.ricoh.scan.high-compression-pdf.enabled`

See 8.4 Integrated Scanning.

Default: N

`ext-device.ricoh.snmp-community`

The community name that will be used when tracking Ricoh ICE Print Cloud print jobs (see 8.6 ICE Print Cloud print jobs).

Default: `public`

`ext-device.ricoh.timeout.scan-prompt-send.secs`

See 8.4 Integrated Scanning.

Default: DEFAULT (30 seconds)

`ext-device.ricoh.use-device-functions.timeout.seconds`

The time to wait for device functions to be made available before failing with an error.

Default: DEFAULT (30 seconds)

`ext-device.ricoh.use-numeric-input-for-account-code`

Set to Y if your organization's account codes are numeric and there is no need for the full soft-keyboard to enter account codes.

Default: N

`ext-device.ricoh.use-numeric-input-for-id`

Set to Y if your organization's identity numbers are numeric and there is no need for the full soft-keyboard to enter identity numbers.

Default: N

`ext-device.self-association-allowed-card-regex`

Only card numbers matching this regex can be associated with existing accounts. For more information about regexes, see 8.3.2 Regular expression filter.

Default: `.*` (match all card numbers)

8.2 Customizing the application

You can customize the embedded application by replacing the PaperCut logo with your organization's logo, along with colors to match. You can also change the welcome text.

8.2.1 Logo

You must save the image in PNG format with the filename `logo.png` and it should be no more than 55 pixels high and 300 pixels wide. Its file size should be less than 500 KB.

Save this image on the PaperCut MF Application Server in the PaperCut MF Application Server directory under the subdirectory `server\custom\web\device\ricoh-smartsdk`. Create the

subdirectory if necessary. The embedded application will fetch the image from the server to display it on the MFD screen upon reconnection.

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

8.2.2 Colors

The colors are defined in the MFD's **Advanced Config** (see 8.1 Config Editor). The options to change are:

- `ext-device.ricoh.accent-color` – the color for buttons and images
- `ext-device.ricoh.primary-color` – the color for the header

Specify the colors using hexadecimal web/HTML notation (`#RRGGBB`) where RR is the red component, GG is the green component and BB is the blue component, or use `DEFAULT` for the default colors.

8.2.3 Welcome text

PaperCut allows the text that appears on the login screen to be customized. The custom text might include instructions or terminology that is more appropriate for your site.

You can customize the text by editing `ext-device-msg.welcome-text` in the **Advanced Config** for the MFD (see 8.1 Config Editor). Use `\n` to create a new line.

8.2.4 Guest access button

Activating the **guest access** authentication method displays a **Guest** button on the PaperCut MF Login screen on the device. PaperCut MF allows the text of this button to be customized.

You can customize it by using the config key `ext-device.ricoh.guest-access.label` (see 8.1 Config Editor).

8.3 Swipe card authentication

To set up swipe card authentication:

1. Enable **Swipe card** as an **Authentication method** in the MFD's configuration in the PaperCut MF Admin web interface.
2. 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).
3. Connect a supported card reader to the MFD.

Note:

- For the list of supported card readers see [11 Appendix: Supported authentication card readers](#).
 - For more information about how to connect supported card readers, see [9.2 Connecting supported card readers](#).
4. Log in to the MFD as the machine administrator.
 5. In **User Tools** → **Screen Features** → **Screen Device Settings** → **IC Card Software Settings**:
 - a. Select **IC Card Reader** then choose **Proximity Card Reader** or **NFC Card Reader**.
 - b. Select the settings for the given reader and ensure **Auth.** is selected.
 6. Reboot the MFD.

Note: Enabling sleep mode (by setting the config key `ext-device.ricoh.card-reader.allow-sleep` to Y), prevents card swipes from waking the panel. Users may need to wake the panel by touching it before using their swipe cards. Disabling sleep mode (by setting the config key `ext-device.ricoh.card-reader.allow-sleep` to N), allows card swipes to activate the panel and logs users in, but at the cost of increased energy usage. For more information, see 9.1 Swipe cards and sleep mode and 8.1 Config Editor.

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 MF Admin web interface. Some readers report the number encoded on the card differently or report information in addition to the card number, such as checksums. PaperCut can treat these cases in three ways:

- no conversion required
- regular expression filter
- format conversion

8.3.1 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.

8.3.2 Regular expression filter

For some cases, a regular expression (regex) might be required that will filter the card number from the complete string of characters reported by the card reader. Documentation on regular expressions can be found on the Internet, e.g. at www.regular-expressions.info.

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

Usually one regex is used for all the devices managed by PaperCut. To do this:

1. In the PaperCut MF Admin web interface, select **Options** → **Config editor (advanced)**.
2. Change the value for `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 you specify the keyword GLOBAL.

PaperCut support (see 3.2 Support) will gladly assist in producing a regex when supplied with a few sample outputs from your card reader.

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*`

8.3.3 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 might report in hexadecimal format, while the number stored in the source (e.g. Active Directory) is in a decimal format. PaperCut includes a few 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 can be defined in the PaperCut MF Admin web interface on either a global basis (applies to all devices) or on a per-device basis.

To set globally:

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

8.3.3.1 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 8.3.3.2 Using custom JavaScript). |

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.

8.3.3.2 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
```

8.3.3.3 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 MF includes an advanced plugin architecture that the PaperCut software development team uses to implement these advanced converters. Contact PaperCut support (see 3.2 Support) to discuss development options and costs.

8.4 Integrated Scanning

Advanced settings are available to control aspects of Integrated Scanning.

Note: A few limitations apply (see 9.6 Integrated Scanning).

8.4.1 Scan prompt timeout

Set `ext-device.ricoh.timeout.scan-prompt-send.secs` (see 8.1 Config Editor) to the time after which a user prompted to add another page is automatically logged out and the pages scanned so far are sent.

8.4.2 High-compression PDF

Set `ext-device.ricoh.scan.high-compression-pdf.enabled` to Y (see 8.1 Config Editor) to produce a high-compression PDF when using Integrated Scanning to scan to PDF. This will result in smaller file sizes, lower quality, and longer scan times.

8.4.3 PDF Archive

The MFD can automatically produce PDF/A files from Integrated Scanning. To enable this, either at the MFD under **User Tools** → **System Settings** → **Administrator Tools** or via Ricoh Web Image Monitor under **Device Management** → **Configuration** → **Device Settings** → **System** → **General Settings**, set **PDF File Type: PDF/A Fixed** to **Active**.

8.5 Adaptable Authentication API (AAA)

Ricoh's Adaptable Authentication API (AAA) allows PaperCut to provide information about the logged-in user to other AAA-capable SmartSDK applications, e.g. GlobalScan NX 2.4.2 or later. When `ext-device.ricoh.aaa.enabled` is set to Y (see 8.1 Config Editor) and the user accesses device functions, the fields in the following table are provided.

| Field | Description |
|-------|-------------|
|-------|-------------|

| | |
|--|---|
| <code>User.AUTHENTICATOR</code> | The name of the authenticator (PaperCutAaaProvider). |
| <code>User.AUTHENTICATOR_PROVIDER</code> | The company that created the authenticator (PaperCut). |
| <code>User.IDENTIFIER</code> | The user's username. |
| <code>User.DISPLAY_NAME</code> | The user's full name, if available. |
| <code>User.EMAIL</code> | The user's email address, if available. |
| <code>User.HOME_FOLDER</code> | The user's home folder, if available. |
| <code>Credential.USER_ID</code> | The user's username (same as <code>User.IDENTIFIER</code>). |
| <code>Credential.PASSWORD</code> | The user's password, which is provided only if the user entered it at the MFD to log in. The entered password is cached only for the duration of the login session. |

8.6 ICE Print Cloud print jobs

Ricoh ICE (Integrated Cloud Environment) Print Cloud print jobs released at the MFD can be tracked by PaperCut. You can enable this via `ext-device.ricoh.ice.log-jobs` (see 8.1 Config Editor).

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 MF Application Server must be correct, because the Print Cloud server sets the time of the job. This can be achieved by using the Network Time Protocol (NTP).
2. SNMP must be enabled on the MFD. This will use the `public` community name. If you want to use a different community name then change `ext-device.ricoh.snmp-community` (see 8.1 Config Editor).

Print Cloud print jobs are logged as copies.

Note: A few limitations apply (see 9.7 ICE Print Cloud print job tracking).

9 Known limitations

9.1 Swipe cards and sleep mode

While the panel is in sleep mode, card swipes are ignored due to the card reader not being powered. Users might need to touch the panel to wake it before using their swipe cards.

Some card readers may also require a few seconds to initialize after powering on. This will happen each time the panel wakes up.

To minimize these issues, when swipe card authentication is enabled, sleep mode is disabled by default (the config key `ext-device.ricoh.card-reader.allow-sleep` is set to N). This allows card swipes to activate the panel and logs users in, but at the cost of increased energy usage. For more information, see 8.3 Swipe card authentication and 8.1 Config Editor

9.2 Connecting supported card readers

Supported card readers are connected via USB ports on the device. However, the type, availability and location of these USB ports is device-dependent and could be:

- on the rear panel
- on the front panel
- in a hidden pocket
- covered with a white cap
- completely visible

While connecting supported card readers:

- use only the USB ports on the device's front panel.
Note: USB ports on the device's rear panel cannot be used to connect card readers.
- if the device has a hidden pocket with USB ports, then it is recommended that you use this. This is because this card reader can be concealed in this hidden pocket, preventing users from attempting to disconnect it in order to access the USB port.
- if the device does not have a hidden pocket but has a covered USB mini B port, then it is recommended that you use this. This is because after the card reader is connected, this port can be covered, preventing users from attempting to disconnect it in order to access the USB port.



Note: Ensure the device is switched off (powered off) before connecting or disconnecting the card reader.

- if the device does not have a hidden pocket or a covered USB mini B port, then use any other available port on the device's front panel.

9.3 Zero stop

In an ideal implementation, PaperCut MF would be able to control exactly how many pages a user can copy and always prevent the user from overdrawing an account. With Ricoh, PaperCut MF 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 MF 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 an overrun.

This overrun can also occur 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 MF 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 an overrun.

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

Ricoh's SmartSDK allows changes only to scan and fax permissions when the user is logged out. This means that if scanning or faxing has a non-zero cost and the user is detected to have run out of credit during a job, the user will be logged out at the end of the job, 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 functions with non-zero cost will be disabled.

9.4 Duplex copy jobs with an odd number of pages are split into two jobs

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

9.5 Usernames

When users access device functions, PaperCut uses their usernames to log them in to the operating system. Unfortunately, these usernames cannot contain spaces, colons, or double quotation marks. To work around this, PaperCut replaces these characters with underscores, hyphens, and single quotation marks, respectively. This means, however, that the device will not be able to distinguish between `test user` and `test_user` (both will be logged in as `test_user`), and private address book entries created by `test user` will be available to `test_user` and vice versa.

Use consistent word separators in usernames to avoid this issue.

9.6 Integrated Scanning

The following limitations exist for Integrated Scanning:

- High compression cannot be applied when PDF/A is enabled or when scanning to black and white PDF.
- Scanning to black and white JPEG is not possible.
- Scanning to color or grayscale TIFF is not possible.
- If you want to scan a portrait paper size that does not fit on the glass or in the feeder, you can place the paper in the landscape orientation but leave the setting as portrait and it will be scanned as portrait. When you do this on the glass but the setting is 2-sided, every second page in the resulting document will be upside down. We recommend setting the duplex mode to 1-sided when scanning off the glass to avoid this problem.

9.7 ICE Print Cloud print job tracking

The following limitations apply when tracking ICE Print Cloud print jobs released at the MFD (see 8.6 ICE Print Cloud print jobs).

- 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 8.1 Config Editor).
- There is no page-level color detection. If the job has even one color page, the job is charged as if all pages are in color.

9.8 Language at the panel

If you change the language at the panel after logging in, the language in the application may not be completely updated until you log out. To avoid this, change the language before logging in.

9.9 Upgrading from 1.0.8

It is not possible to install over the top of version 1.0.8 of the embedded application. This version needs to be uninstalled prior to upgrading to a newer version.

10 Troubleshooting and frequently asked questions

What is the IP address of my PaperCut MF Application Server?

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

The Remote Operation Client displays a device unreachable error message in the output display.

Verify that the MFD address and administrator credentials are correct, and that the MFD is accessible over the network from this computer. Once verified, retry the action in the Remote Operation Client.

The Remote Operation Client displays an error message when running **Configure for SmartSDK**.

If an error message is displayed in the output display, this can indicate that this MFD model is unable to be remotely configured using the Remote Operation Client. If this occurs, manually configure the MFD via the panel or Ricoh Web Image Monitor (see 4.3.4 Configure the MFD without the Remote Operation Client, part 1 and 4.3.7 Configure the MFD without the Remote Operation Client, part 2).

The Remote Operation Client displays a different error message.

Enable debug logging via **File** → **Settings**, reproduce the error, collect the debug logs, and contact PaperCut support (see 3.2 Support).

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

This indicates that the embedded application is unable to connect to the PaperCut MF Application Server over the network. The embedded application will continually try to connect to the PaperCut MF Application Server, 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 MF Application Server is not running.
- There are firewalls or network routing configuration that stop the network connection being established. Check for firewalls on the PaperCut MF Application 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 MF Application Server name or IP is set incorrectly. This can be checked/set on the **Configure** screen on the MFD (see 7.3 Connection details).

The embedded application keeps coming to the foreground and then going to the background.

Set the **Function Priority** to **PaperCut MF** (see 4.3.4.4 Configure inactivity detection).

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

Yes. The recommended way to do this is to enable **Track & control scanning** in the PaperCut MF Admin web interface with a **Page cost** of zero.

A message indicating there was a problem accessing device functions displays when I try to access device functions or Integrated Scanning, shortly after waking the MFD.

This may mean that the MFD is taking too long to recover from energy saving mode. Try setting **System → General Settings → Energy Saving Recovery for Business Application to Off**.

I see an error in the embedded application.

This may indicate a configuration issue or may be a software bug. Recheck your settings and reboot the MFD. If problems continue, collect the embedded debug log files (see KB article) and contact support (see 3.2 Support).

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

You have a few options. You can:

- Instruct your users to change their network passwords to contain only standard characters.
- 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.
- Set up an external USB keyboard.

11 Appendix: Supported authentication card readers

The supported card readers are listed in the following table.

| Manufacturer | Model | Card types |
|--------------|----------------|--|
| Elatec | TWN4 (various) | CASI-RUSCO / HID / iCLASS / Indala / LEGIC / MIFARE / NexWatch |
| Inepro | SCR-708 | EM Microelectronic / HID / iCLASS / Indala / LEGIC / MIFARE |
| RF IDEas | MS3-00M1 | Magnetic Stripe |
| RF IDEas | RDR-6081 | HID |
| RF IDEas | RDR-6381 | Indala |
| RF IDEas | RDR-7081 | iCLASS |
| RF IDEas | RDR-7581 | iCLASS / LEGIC / MIFARE |
| RF IDEas | RDR-80081 | CASI-RUSCO / HID / iCLASS / Indala / LEGIC / MIFARE / NexWatch |
| RF IDEas | RDR-80581 | CASI-RUSCO / HID / iCLASS / Indala / LEGIC / MIFARE / NexWatch |