PaperCut MF - Samsung Embedded Manual

Contents

1 Document revision history

Published date or release	Details of changes made
19.0.0	5.6 SNMP

2 Installation

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

2.1 Samsung Device Compatibility

PaperCut supports selected multi-function Samsung devices supporting the XOA Embedded framework version 1.10 or later. For a list of supported models, see http://www.papercut.com/tour/embedded/samsung#supported.

2.2 Requirements

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

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

- PaperCut is installed and running on your network. Please see the 'Introduction -> Quick Start Guide' section of the PaperCut user manual for assistance.
- Ensure that the Samsung device is connected to the network.
- Have available the network name or IP address of Samsung device.
- Have available the username and password for administrator access to the devices internal web interface.
- It is recommended that the device be configured with a *static IP address*.
- Verify that firewalls or other network restrictions don't prevent the device's access to the PaperCut server on port 9192 and 9193.

2.3 Setup Procedure

### 2.3.1 PaperCut Settings

- o Ensure PaperCut is setup on your server and monitoring print activity before proceeding to install the embedded application.
- o Log into the PaperCut administration interface using a web browser (e.g. http://papercut-server:9191/admin).
- o Navigate to 'Options -> Advanced' and ensure the option 'Enable external hardware integration' is enabled.
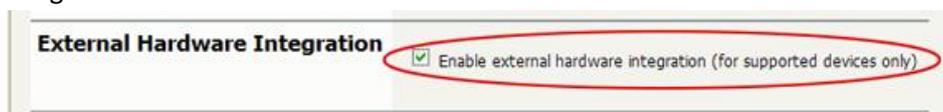
- o Press 'Apply'.

2.3.2 Install the PaperCut Application

- The PaperCut embedded application for Samsung is provided in a file named `pc-samsung.par`, located under your PaperCut installation directory on the server, in the subdirectory `[app-path]/providers/hardware/samsung`
- Access the device's web interface (Samsung SyncThru) through your web browser.
- Log in as administrator.
- Click the "Maintenance" header in the purple top menu bar and then "Applications" on the left.   On some devices you will have to click a "Network/Security/Maintenance" button first for the menu bar to appear.
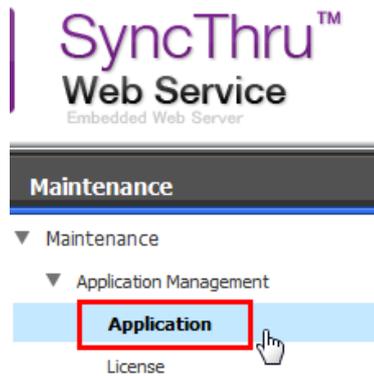
- Click the "Add" button.
- Choose "Desktop" and click the "Browse" button.
- Find the file named `pc-samsung.par` on your machine and click OK.
- A window will appear listing PaperCut as an application to install, click OK again.
- Installation will commence. After successful completion, PaperCut should show up in the list of applications.
- Log out of the web interface.
- Now wait a few seconds for the PaperCut setup screen to show on the device display.

2.3.3 Configure PaperCut embedded settings

- Login to the devices's web interface, Samsung SyncThru, as administrator.
  IMPORTANT: On the login window, the "Domain" drop down list will now show 2 items, PAPERCUT and LOCAL. Please choose LOCAL to log in now and at all times in the future when accessing the web interface.
- In the top menu bar, you will now find an extra menu item called "XOA", and when hovering over it, a sub item called "PaperCut". Click in the "PaperCut" sub item.
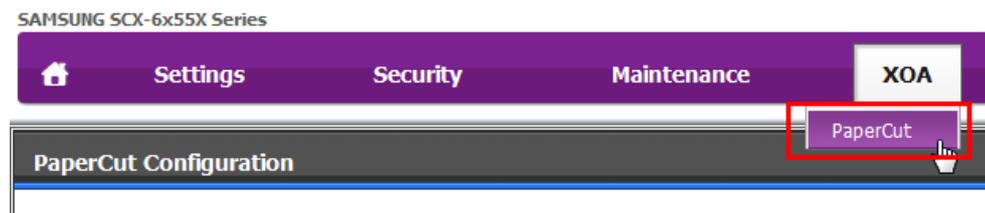
- o   Enter a name for the device that will later identify it in the list of devices in the PaperCut web administration interface. Choose a name like "Library Copier" or "Samsung 1".
- o   Enter the host name or IP address of the PaperCut server.
- o   Click "Apply".
- o   The device will attempt to connect to the PaperCut server. If successful, you may need to accept the server's SSL certificate.

PaperCut Configuration

			Accept	Cancel

A new certificate has been detected connecting to:

Server IP/Host	red
Fingerprint	a2 80 9b b1 d9 a1 d5 b3 d5 92 c6 bd 8b 69 91 6b 73 b6 4f 7d

Permanently accept this certificate?
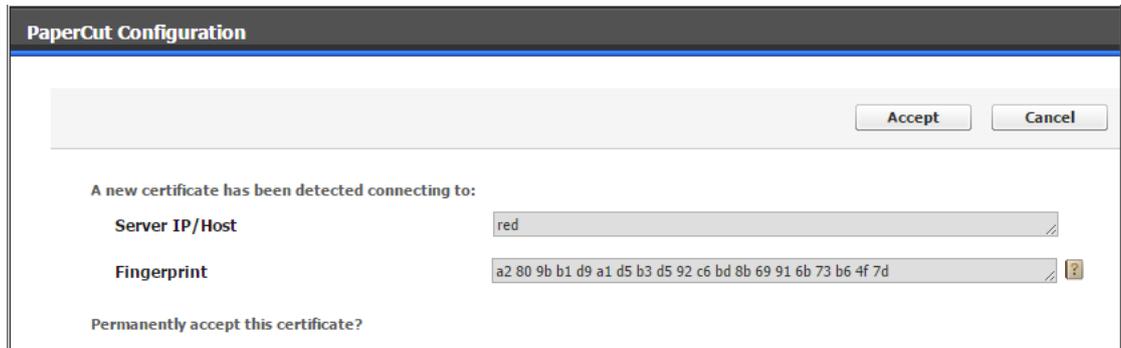
- o   Check that the SHA-1 fingerprint matches the server's certificate. You can also see the certificate details by hovering over the question mark (?) icon. See the 'Troubleshooting SSL' section of the PaperCut MF manual for details on viewing server certificates.
- o   Press the 'Accept' button to permanently accept the server certificate. The device will attempt to connect to the server with the accepted certificate.
- o   Log out of the web interface.

2.3.4 Disable Print Authentication

- • Login to the device's web interface as an administrator.
- • In the top menu please select the "Security" -> "User Access Control" menu.
- • Under "Application State", press the "Edit Application" button.
- • Verify that the "Print" application has authentication disabled. If this is not done, no network printing will be allowed to the device. If it is enabled, select the "Print" application and press the "Enable/Disable" button.

Edit Application

	Enable/Disable	Close

	No.	Application Name	Authentication
☑	1	Print	disable
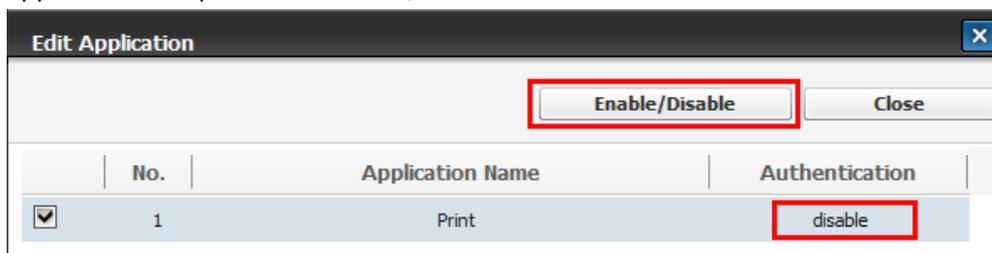
2.3.5 Set the Copier Function Timeout

The number of seconds showing the MFD copier functions before the user is logged out and the display reverts back to the login screen. This time is configured using the "Auto Logout" timer. This setting is located in different locations on different Samsung MFPs in either the Web admin or the device LCD. i.e.

- On the LCD in either:
  - Machine Setup->Security->Authentication->Method->Options->Auto Logout
  - Admin Settings->Setup->Authentication->Auto Logout
- On the device web admin interface in location:
  - System Setup->Machine Setup->Auto Logout

### 2.3.6 Additional Network Security (optional)

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

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

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

2.4 Verify the successful installation and configuration

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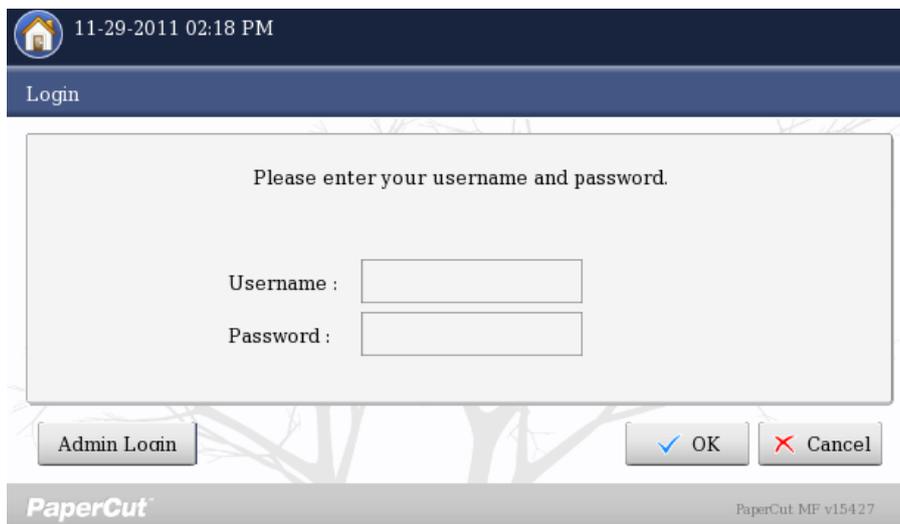
- Log on to the PaperCut administration web interface at http://<papercut-server>:9191/admin . On the Devices tab, you should see the device listed under the name chosen in step 2.3.3.
- You should now proceed to configure page costs, the authentication methods you will allow and other settings relating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

2.5 Upgrading to a newer version

The procedure for upgrading an existing embedded application to a newer version is done by re-uploading the installation file. It is similar to the initial installation (see section 2.3.2). Please note that only the device-level installation needs to be performed, and you shouldn't have to perform any additional configuration within the PaperCut administrator interface.

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

3 Post-install testing

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

1. To ensure that the embedded application is working as expected
2. To familiarize yourself with the features and functionality of PaperCut and the embedded application.

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

3.1 Test Preparation

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

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

To setup these users in PaperCut:

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

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

1. In PaperCut, select the "Users" tab
2. Select the 'testusersimple' user.
3. Set the user's balance to $5.00 and verify the account is set to "Restricted".
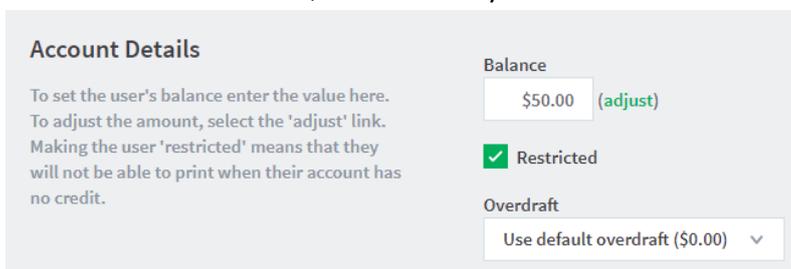
4. Verify that this user is set to "Automatically charge to personal account" in the "Account selection" options.
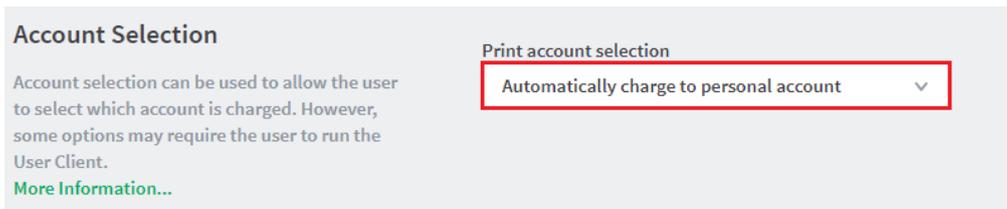
5. Press the "OK" button to save.

To configure 'testuseradvanced':

1. In PaperCut, select the "Users" tab
2. Select the 'testuseradvanced' user.
3. Change the "Account Selection" option to "Show standard account selection" and enable the relevant account selection options.
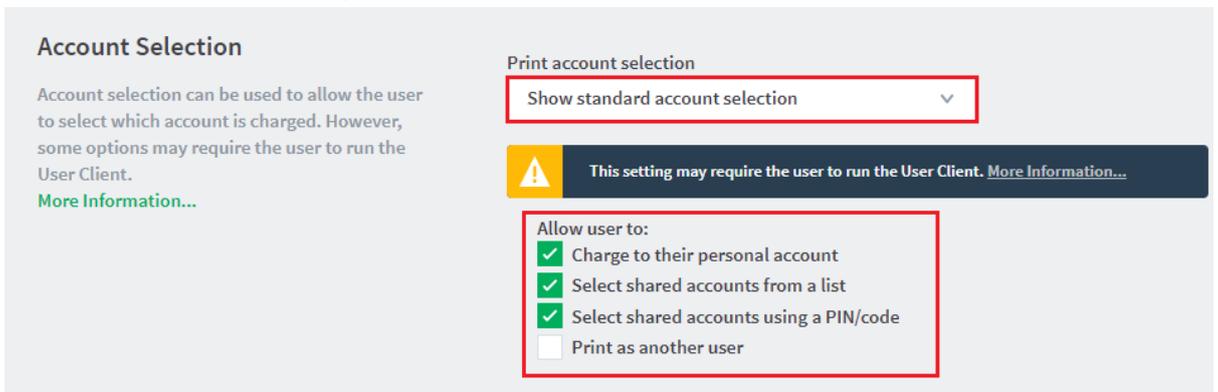
4. Press the "OK" button to save.

3.2 Scenario 1: Standard copying

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

At the photocopier:

1. The photocopier should be showing the screen as shown below.
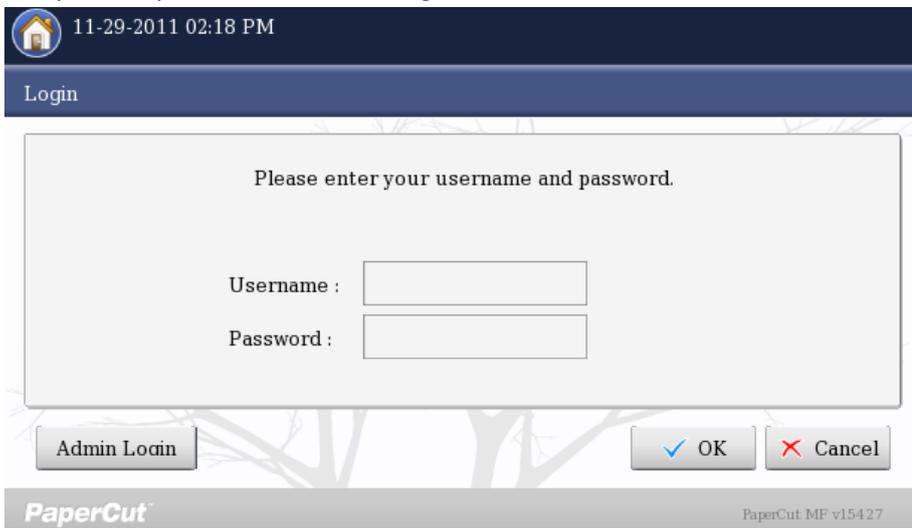
2. Press the blank field next to "Username", enter the username "testusersimple" using the on-screen keyboard and press "OK". Press the "Password" field and enter the password for this account.
3. Press "OK".
4. You will see an account confirmation screen with an "OK" button, press "OK
5. You will now see the home screen. Note: The layout and the shape and order of icons may be different for your model.

6. At this point the copier will be enabled for usage.
7. Perform some test copying, i.e. select the copy icon and press the green button on the device button panel to perform a copy as normal.
8. Once completed copying press the "ID" button on the device button panel and confirm the log out by pressing "OK" on-screen. Note: On some devices logging out requires pressing a "Logout" button on the screen in the top-right corder.

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

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

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

3.3 Scenario 2: Copying with account selection

Firstly a test account should be created:

1. Log into PaperCut, select the "Accounts" tab.
2. Select the "Create a new account…" action link on the left.
3. Enter an account name "Test Account 1".
4. Enter PIN/Code "2233".
5. Press "Apply".

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

At the photocopier:

1. The photocopier should be showing the "Authentication" screen as before.
2. Log in as "testuseradvanced" using the password for that account and press "OK".
3. You will see the following:
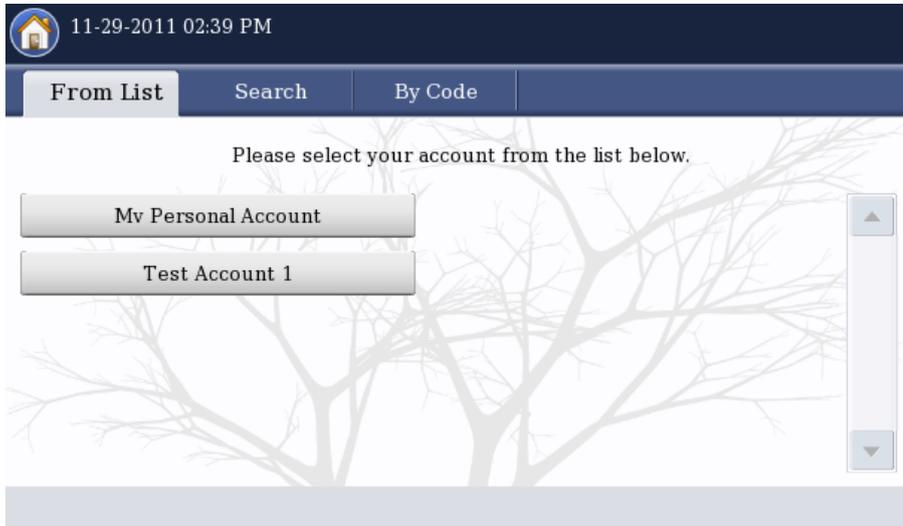
4. Press "Test Account 1".
5. The confirmation screen will show that "Test Account 1" has been selected. Acknowledge by pressing "OK".
6. Now perform copying as normal and finally log out using the "ID" panel button or on-screen "Logout" button as before.

Note: The account selection workflow can vary according to the user options selected, such as "Advanced account selection" or "Show standard account selection". For more information, see the PaperCut MF manual. At the device level, you may also configure whether you wish to see the Account Summary screen or not.

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

1. Log in to PaperCut
2. Select the device from the "Devices" tab
3. Select the "Job log" tab. This will list all recent copying activity on the copier. The copying just performed as the test user should be listed.
4. Verify the details of the job (i.e. that the job was charged to the selected account).
5. In the log details, click on the "Charged To" account name to view the account's details.
6. Selecting the "Job log" tab will display all print/copy activity for the account, and will show the test photocopying that was performed.

3.4 Scenario 3: Print release

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

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

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

1. In PaperCut, select the "Printers" tab.
2. Select the print queue for the Samsung device that will be used for testing.
3. Enable the "Hold/release queue" option.
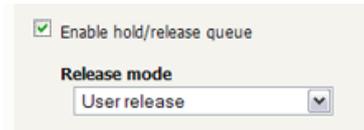
4. Press OK/Apply to save the changes. All printing to this queue will now be held until released by a user.

Make sure the copier is enabled for print release:

1. In PaperCut, select the "Devices" tab.
2. Select the Samsung device.
3. Under "Device function", tick "Enable print release".
4. Select the print queue that was enabled for hold/release above. The Samsung device will allow jobs on the selected queues to be released.
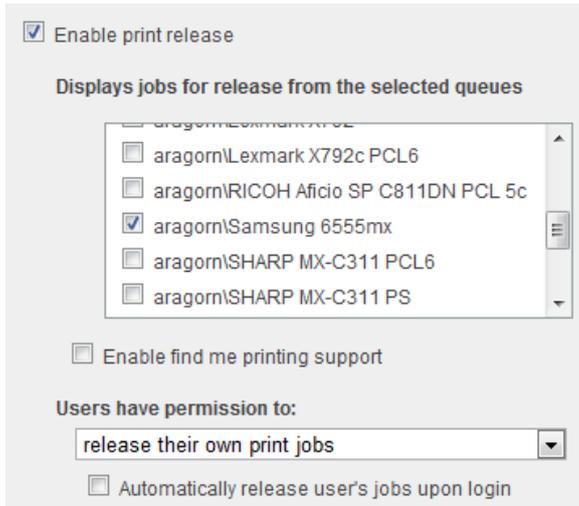
5. Press "OK" to save.
6. Log into a computer workstation as 'testusersimple'.
7. Print a few jobs to the print queue that was configured above. The jobs will be held in the hold/release queue.
8. Confirm that the jobs are held, by checking that the jobs are listed in the "Printers -> Jobs Pending Release" page of the PaperCut administration interface.
9. Confirm that the username is 'testusersimple'.

At the device:

1. Log in with the 'testusersimple' username and corresponding password as in scenario 1.
2. A list of print jobs will show.
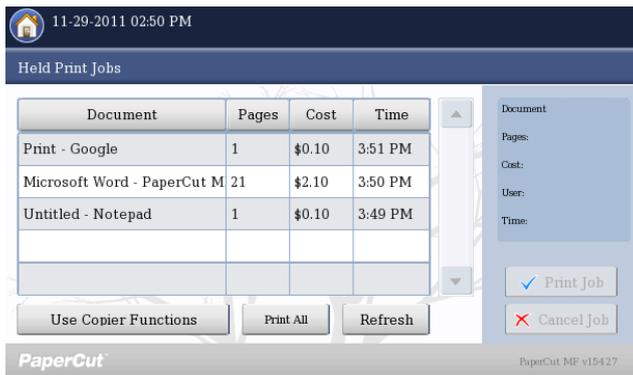
3. As you select different print jobs, the details window on the right will reflect the details of the currently selected job.

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

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

6. You can now proceed to the copier home screen to use copier functions like copying, scanning etc. by pressing the "Use Copier Functions" button and proceeding with account selection (if enabled) as per previous sections.

    a. Note: Once arrived at the copier home screen, you can release more jobs by pressing the "Held Jobs" application icon.

7. Remember to sign out using the "Home" button in the top left corner of the screen, or, if at the home screen, using the "ID" or "Logout" buttons, depending on device.

3.5 Scenario 4: Scanning and faxing

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

To enable tracking of scans and/or faxes:

1. In PaperCut, select the "Devices" tab.
2. Select the MFD device.
3. Under "Device function" tick "Track & control scanning" (or "Track & control faxing").
4. Select the charging type "advanced" set some numbers for page costs and thresholds. The cost after the threshold should be lower than the standard cost as it represents a volume discount. As an example, the screen shot below shows that the first page of a scan is charged at $0.10 and any subsequent page at $0.05.

At the photocopier:

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

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

1. Log in to the PaperCut administration interface.
2. Select the device from the "Devices" tab.
3. Select the "Job Log" tab. This will list all copying, scanning and faxing activity on the copier. The job just performed as the test user should be listed. Verify the details of the job that was just performed.

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

4 Configuration

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

4.1 Device Function

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

Each device function is discussed in the following table.

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

4.2 Authentication Methods

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

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

Authentication methods available for a device

Each authentication method is discussed in the following table.

Authentication Method	Description
Username and password	The user may use their domain/network username and password to log into the device.
Identity number	The user may log in with their identity number. Identity numbers are convenient when usernames are long or cumbersome to enter. For example, rather than entering a username like 'john.smith.001', it may be more convenient to enter an employee ID of '1234'. See the PaperCut user manual for information about user identity numbers, including importing identity numbers from an external source.
Identity number -> Require PIN	When a user logs in with their identity number, they must also provide their associated PIN. This provides additional security for identity number logins.
Swipe card	The user may log in by swiping a card (e.g. magnetic stripe, smart card, RFID). See the PaperCut user manual for information about user card numbers, including importing card numbers from an external source. Please see Appendix A below for a list of supported card readers.
Swipe card -> Require PIN	When a user logs in by swiping a card, they must also provide their associated PIN. This provides additional security for swipe card logins.
Swipe card -> Enable self-association with existing user accounts	Users can swipe cards previously not used or registered at the device with PaperCut and will be prompted for their username and password. The swipe card can then be used at subsequent logins. See chapter 5.2 for advanced configuration of this function.

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

4.3 Application Authentication

As an alternative to locking down the device and requiring PaperCut authentication for any device usage, "application authentication" provides the user with access to the home screen without prior log in and will only require log in when the user selects specific functions that are to be tracked and controlled by PaperCut.

This allows for easy access to functions that are not tracked and controlled by PaperCut, such as scanning, which in many organizations is free and will not be tracked whereas copying is charged or at least tracked.

To enabled application authentication:

- Log into the device's web interface.
    1. From the "Security" menu select "User Access Control".
    2. Change the "Authentication Mode" to "Application Authentication" and press "Apply".
    3. Press "Edit Application" button.
    4. For each function that you wish to be tracked and/or controlled by PaperCut, select the tick box of the function and press the "Enable/Disable" button to change the setting in the "Authentication" column to "Enabled". NOTE: PaperCut only tracks copy, scan and fax functions.
    5. Press "Close".
- If you have print release enabled for the device, log onto the PaperCut web administration console and select the device from the "Devices" tab.
    1. In the "Advanced Config" section, set "ext-device.samsung.login.show-release" to "N" and press "Update". This will remove the print release function from the log on process. It will only be available using the "Held Jobs" application icon on the device's home screen.
    2. In the "Advanced Config" section, also change "ext-device.samsung.login.select-function" to "DEFAULT" if it was previously set to another value.

4.4 Shared Account Selection

Shared account selection options at the MFD mirror the options presented in the User Client. 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.

4.5 Customizing Text and Messages

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

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

4.6 SNMP

PaperCut MF uses SNMP to:

- block the release of jobs to the device when it is in error, and
- retrieve the device's printer toner levels.

By default, PaperCut MF uses SNMPv1/v2c to perform these actions. You can, however, select to use SMPv3 for better security and encryption.

For more information about SNMP, see the PaperCut MF manual.

To configure PaperCut MF to use SNMP:
1. Log in to the PaperCut MF Admin web interface.
2. Navigate to "Devices".
3. Select the device.
4. In "External Device Settings"**:**
    - for SNMPv1/v2c, ensure the Use SNMPv3 for Toner Retrieval and Device Error Monitoring checkbox is not selected (default).
    - for SNMPv3, select the Use SNMPv3 for Toner Retrieval and Device Error Monitoring checkbox; then enter:
        - Context name, Username, Privacy password, Authentication password – If these values are available at the device web interface, then use the same values. It not, leave them blank or enter your own value.
        - Authentication protocol – Select either "MD5" or "SHA".
        - Privacy protocol – Select either "DES" or "AES".
5. Click "Apply".

5 Advanced Configuration

5.1 Config Editor

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

Config name	Description
ext-device.samsung.message.welcome	Specify two lines of text to appear on top of the login screen in place of the default message. These can include instructions on which username and password are valid for the device. The value "DEFAULT" in this field will re-enable the default text.
ext-device.samsung.restricted.allow-multiple-login	Setting this to "Y" will allow users to log in and charge copy jobs to a restricted account (user account or shared account) if another copy job charged to the same account is still in progress. This may cause cost overruns with users going into negative balance. Default: N
ext-device.self-association-allowed-card-regex	Specify a regular expression that limits which card numbers are accepted for associating swipe cards with user accounts. See chapter 4.2 for details. Contact your reseller or Authorized Solution Center for help with regular expressions. You can find their contact information in your PaperCut Admin interface on the **About** page. Defaults to ".*" (dot-star) which includes all card numbers.
ext-device.card-self-association.use-secondary-card-number	Select whether user self-association should occupy the primary or secondary card number. It overrides the global setting unless the keyword "GLOBAL" is specified. This is useful when there is a mix of different non-configurable card readers that read different numbers from an ID card. Set to "Y" to use the secondary card number, "N" to use the primary card number. Default: "GLOBAL" to defer to the global configuration option.
ext-device.card-no-regex	See chapter 5.2
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. Valid values:

- DEFAULT—includes noPaper, doorOpen, jammed,offline, inputTrayMissing, outputTrayMissing, markerSupplyMissing, outputFull

- A comma-separated list of error types. Valid error types include lowPaper, noPaper, lowToner, noToner, doorOpen, jammed, offline, serviceRequested, inputTrayMissing, outputTrayMissing, markerSupplyMissing, outputNearFull, outputFull, inputTrayEmpty, overduePreventMaint

ext-device.samsung.personalized-sender	Setting this to "Y" will prepopulate the "From:" email address in the Scan-To-Email application with the email address of the logged in user as registered in PaperCut. Default: Y
ext-device.block-release-on-error.snmp-byte-order-mode	Switch the SNMP status byte order between Forward and Reverse on devices that can return SNMP status in multiple byte orders, so that Samsung embedded Release Stations can correctly block jobs when the device is in error. Valid values: • DEFAULT—(recommended) PaperCut MF decides which mode to use. The decision is made by comparing the device model against a list of devices that PaperCut MF knows use Reverse mode by default. If the device is not in the list, Forward mode is used. If your device is reporting the wrong errors, try Reverse mode and if that works, please let us know at support@papercut.com, and include the model you are using. • FORWARD— for models that support SNMP status in forward byte order by default. • REVERSE—for models that support SNMP status in reverse byte order (for example, Samsung SCX-6x55X Series, Samsung SCX-6x45 Series, Samsung SCX-5835_5935X Series) by default.
ext-device.samsung.locked-sender	Setting this to "Y" will prevent users from changing the "From:" email address in the Scan-To-Email application. Default: Y
ext-device.samsung.personalized-destination	Setting this to "Y" will prepopulate the "To:" address in the Scan-To-Email application with the email address of the logged in user as registered in PaperCut. Default: Y

ext-device.inactivity-timeout-secs	Number of seconds showing PaperCut's login, print release or account selection screens until the display reverts back to the login screen. Does not auto-logout users using copier functions. That timeout is controlled by the MFD onboard setting "Auto Logout" as explained in Set the Copier Function Timeout
ext-device.samsung.login.show-release	Setting this to "N" will remove the print release function from the login process. Print release will only be available via the print release application icon on the device's home screen. Default: Y
ext-device.samsung.login.select-function	Select the device function to show after the login process completes. Usually this will be the home screen. To e.g. directly display the copy function after login, enter "COPY". Valid choices are "DEFAULT", "HOME", "COPY", "FAX", "SCANTOEMAIL", "SCANTOSERVER", "SCANTOPC" and "RELEASE", where "RELEASE" will show held jobs for release.
ext-device.samsung.delete-blocked-jobs-after-mins	Specify a positive value (≥ 0) to delete/cancel blocked jobs after the specified number of minutes. **Warning:** Depending on your setup, enabling this feature might charge for the job regardless of it being deleted. Default: -1 (feature is disabled)
ext-device.samsung.delete-blocked-jobs-on-logout	Set to "Y" to delete/cancel blocked jobs on the device when a user logs out of the device. Default: N (feature is disabled) **Warning:** Depending on your setup, enabling this feature might charge for the job regardless of it being deleted.
ext-device.samsung.header.color	See chapter Customizing the Header
ext-device.samsung.header.textcolor	See chapter Customizing the Header

5.2 Customizing the Header

The header text color can be customized via the "Advanced Config" tab in the device details screen, see Config Editor:

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

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

5.3 Customizing the Footer

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

- To do so, create a 24bit PNG image 1024 pixels wide and 55 pixels high.
- PaperCut will superimpose the product name and version number in dark gray text on the right side of the footer image. Be sure to choose the background color so that dark gray text can be read with sufficient contrast.
- The image must be saved as PNG file with the filename "`footer.png`".
- This image should be saved on the PaperCut application server in the PaperCut application directory under the subdirectory `server\custom\web\device\samsung`. Create the subdirectory if necessary. The embedded application will fetch the image from the server to display it on the device screen.

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

5.4 Configuring Swipe Card Readers

The Samsung embedded solution supports USB card readers that emulate standard PC keyboards. Card reader models should be tested and verified prior to deployment.

Supporting Card Reader authentication is as easy as:

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

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

Card Number Needs No Conversion

- 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`.

Regular Expression Filters

- For some cases, a "regular expression" *may* be required that will filter the card number from the complete string of characters reported by the card reader. Documentation on regular expressions can be found on the Internet, e.g. at www.regular-expressions.info.
    - The regular expression must be fashioned so that the card number is returned as the first match group.
    - Usually one regular expression will be used for all the devices managed by PaperCut; this must be entered in the "Config editor (advanced)" which you will find on the Options tab under Actions. The key is called "ext-device.card-no-regex".
    - The global setting however can be overridden on a per-device basis: The key "ext-device.card-no-regex" can also be found on the " Advanced Config tab in the device details screen. This setting will override the global setting unless the keyword "GLOBAL" is specified.
    - PaperCut developers will gladly assist in producing a regular expression when supplied with a few sample outputs from your card reader. Contact your reseller or Authorized Solution Center for help with regular expressions. You can find their contact information in your PaperCut Admin interface on the **About** page.
    - If you would like to write your own regular expressions, here are some examples:
        - Use the first 10 characters (any character): `(.{10})`
        - Use the first 19 digits: `(\d{19})`
        - Extract the digits from between the two "=" characters in "123453=292929=1221": `\d*=(\d*)=\d*`

Card Number Format Converters

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

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

Like regex's, the convertors may be defined on either a global (all devices) or on a per-device basis. To set globally:

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

To set at the device level:

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

Standard Converters

Convertor	Description
`hex2dec`	Convert a hexadecimal (base 16) encoded card number to decimal format. Hexadecimal numbers usually contain 0-9 and A-F. This will convert "946EBD28" to "2490285352".
`dec2hex`	Convert a decimal encoded card number to hexadecimal format. This will convert "2490285352" to "946EBD28".
`ascii-enc`	Unpack an ASCII encoded card number string. E.g. given the number "3934364542443238", the ASCII code "39" is converted to 9, "34" -> 4, "45" -> E, with the entire number resulting in "946EBD28".
`javascript:<path>`	Advanced: Define a custom conversion function in JavaScript (see below)

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

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

Using custom JavaScript

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

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

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

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

Other advanced notes

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

6 Known Limitations and Security

Samsung devices have some limitations that have an impact on functionality and security. For any current known issues visit:

http://www.papercut.com/kb/Main/KnownIssuesSamsungEmbedded

6.1 Zero Stop

Ideally, PaperCut MF would be able to control exactly how many pages a user can copy and always prevent the user from overdrawing an account. However, in some cases depending on the copier speed, a restricted user's job might not be stopped immediately when their balance reaches a value that is less than the cost of the next page.

6.2 Job restrictions on restricted accounts

Users are prevented from logging in with a restricted account (user account or shared account) if another job charged to the same account is still in progress. Jobs in progress can be viewed using the "Status/Job cancel" button on the device panel. Once the previous job has finished, users can log in again and charge to the restricted account. This behavior can be overridden using a configuration key, please see chapter 5.1.

6.3 Scan to device storage jobs charged when job is cancelled due to zero stop

The newer Android-based Samsung devices have on device storage, known as a Box. This can be used as a scanning destination. If a user has insufficient funds to send all scanned pages to the Box, zero-stop applies and the job is cancelled. However, the user is charged for the job.

A.Appendix: Supported Authentication Card Readers

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

- Elatec TWN3
- Elatec TWN4
- HID OMNIKEY 5427
- Magtek Magnetic stripe card reader
- RFIdeas (USB) - RDR-6081AKU
- RFIdeas (USB) - MS3-00M1AKU
- RFIDeas RDR-80581AKU
- RFIDeas RDR-805H1AKU
- RFIDeas RDR-805T1AKU

Most keyboard emulating readers should operate correctly. Please contact your Samsung dealer or your PaperCut reseller or Authorized Solution Center for assistance. You can find their contact information in your PaperCut Admin interface on the **About** page.