PaperCut 3rd Party Hardware Payments Manual

PaperCut 3rd Party Hardware Payments provides the ability for users to add credit to their PaperCut printing account and/or pay for print jobs at the time of printing using a supported hardware device. Unlike the *payment gateway module*, which allows users to add credit from an external source via the user web tools interface, hardware payments are made via the standalone *release station* software. This has the advantage of allowing integration with devices such as cash acceptors (coin and bill/note validators) and card readers.

This document contains general information that may be of use when setting up hardware payments with any device. It is designed to be used in conjunction with a separate, device specific setup guide.

Contents

1 Overview

Depending on the credit source (the 3rd party hardware device), payment integration may be provided in one of two possible modes: pay station mode, or pay and release mode.

Pay station mode is designed for devices such as cash acceptors where a payment can be made but no change can be returned. Payments are made directly into a user's account, which can then be used for printing. A station can be run in dedicated pay station mode so that the station is used for payments only (and has no association with print job release), also known as a kiosk type system.

Pay and release mode is designed for devices that can provide change or store a balance, such as a cash acceptor with coin return, or a stored value card reader. The cost of held print jobs is charged to the device as they are released. The remaining amount can then be returned to the user as change or left on their card when the user logs out.

Both modes can additionally be configured to print fully-customizable receipts and error notifications to an acknowledgement printer – usually a small thermal printer mounted next to, or in the pay station.

2   Configuring PaperCut

These steps should be completed before continuing with the steps in the device specific setup guide.

To prepare PaperCut for use with hardware payments:

1. Ensure PaperCut is already set up and running.

2. From the PaperCut administration interface, navigate to **Options → Advanced → External Hardware Integration** and enable the option **Enable external hardware integration** .

3. Set up a release station as per the instructions in the `README.txt` file in the `release` folder of the PaperCut installation directory.

3   Customization and Advanced Configuration

While each device / credit source comes with a separate document for setup and device specific configuration, there are several configuration options that apply to all credit sources.

The configuration files of interest are:

- `[app-path]/release/config.properties`, which provides global configuration options for the station.

- `[app-path]/release/extensions/pay-and-release.properties`, with options specific to pay and release mode.

- `[app-path]/release/extensions/pay-station.properties`, with options specific to pay station mode.

- `[app-path]/release/extensions/credit-sources/*`, where you will find several config files specific to the type of device that will be connected.

3.1   Instructions

The station can display a short message on screen that instructs the user about how to use the payment device. The instructions can be used to guide the user through the process of adding to their account balance as well as providing any organization specific information (such as the places their balance may be used).

The `instructions` option is available in most of the config files. Setting the option in more specific config files will override the option in less specific ones. E.g. setting the instructions option in the pay and release config file will override the instructions set in the global release station configuration.

3.2   Station Name

By default the station will be listed on the `Devices` tab of the PaperCut administration interface with the name `pay-station-hostname`, where `hostname` is the host name of the system where the pay station is running.

This name may be changed by editing the pay station or pay and release configuration file and setting a value for the `station-name` option.

3.3   Visual Customization

The pay station may be visually customized in the same way as the release station. See the PaperCut user manual section **Hold/Release Queues & Print Release Stations → Release Station Configuration → Standard Release Station Configuration** for further information.

3.4   Pay and Release Mode Specific Configuration

3.4.1   Account Charge Order

The `account-charge-order` option in the pay and release config file determines which source of credit is charged first. Currently the two options are the user's personal account balance and the credit source's balance.

E.g. a user prints a job costing $0.50. They have $0.20 in their account. The user logs into the station and inserts their card, which has a balance of $1.00. The station is configured to

charge the personal account before the credit source. When the user releases the job, $0.20 will be charged to their personal account (i.e. the full amount possible from their personal account), and the remaining $0.30 is charged to the credit source. The user now has $0.70 left on their card.

If the charging configuration had been reversed, the full $0.50 cost of the job would have been charged to the card, leaving $0.50 on the card and $0.20 in their account.

3.4.2 Providing Change

The `give-change` option determines what happens to the remaining balance when a user logs out. The device specific setup guides may provide a recommendation on the option to use. E.g. card readers should almost always use the value `NA` to indicate that change is irrelevant (i.e. the remainder should be left on the card) and the user should not be asked what to do with it.

For more information see the comments in the config file.

3.4.3 Balance Labels

The `personal-balance-label` and `credit-source-balance-label` options can be used to append text after the displayed balances. E.g. "`$1.00 (card)`" instead of just "`$1.00`". This can be useful if users are confused about which balance is which.

3.5   Self-registration of Users (with cards)

(NOTE: This feature is available in PaperCut 9.5 or higher).

PaperCut has a feature called "Internal Users" which allows users to be managed internally by the application instead of relying on an external source (like LDAP or Active Directory). This can be useful for managing guest users (or anonymous users) on your network.

PaperCut allows these internal users to be created by an administrator, or through a self-registration form using a web browser. For more information on "Internal Users" see the PaperCut manual chapter called "Managing Guests and Internal Users".

The Pay Station may be used to self-register users, and this works as follows:

1. The user swipes their card at the pay station. (Any card-reader that emulates a standard keyboard can be used.)

2. If PaperCut detects that the given card is not registered with the system, the user will be prompted to register a new user account.

3. They will be prompted for a PIN number (which will be also set as their password).

4. PaperCut will create the user (creating an automatically generated username – which will be displayed to the user).

5. The user may then add cash to their account as usual.

Once their account is created they can login at other devices, or user their username and PIN/password to authenticate with PaperCut for printing, release stations or the end-user web interface.

3.5.1   Configuring card self-registration

The first step in configuring card self-registration is to enable the "Internal Users" feature in PaperCut (see PaperCut manual for details). The username prefix configured there will also be used as the prefix for automatically generated usernames created via the VCA.

The next step is to enable card self-registration on the Pay Station. To do this:

1. Open the config.properties (`[app-path]/release/config.properties`) file in a text editor.
2. Enable card authentication by changing the "use-card-authentication" setting to "Y".
3. Enable card self-registration by changing the "enable-card-self-registration" setting to "Y".
4. Save the configuration.

These changes will take effect after restarting the pay station.
If you do not need self-registering users to have PINs (or passwords), then the PIN entry can be disabled by setting the "card-self-registration-request-pin" setting to "N" (in the same way as described above).

In some environments, the administrator may not want to allow all types of cards to be self-registered with the system. For example, you may only want cards purchased from your

organization to be used for self-registration. You can configure PaperCut to only accept cards matching a particular pattern, using the "card-self-registration-allowed-card-regex" setting. By default any card number is allowed. The card will only be allowed to self-register if it matches the given regular expression. Below are some examples of regular expressions:

Regular Expression	Meaning
123456	Matches any card number containing "123456"
^123456	Matches any card number starting with "123456".
123456$	Matches any card number ending with "123456"
^abc.*123$	Matches any card number starting with "abc" and ending in "123"
^\d{9}=	Matches any card starting with 9 digits and then an "=".
^200[1234]	Matches any card starting with "200" and then any one of "1", "2", "3", "4". E.g. it would match 2004, but not 2006.

4 Acknowledgement Printer: Receipts and Transaction Errors

An acknowledgement printer can print receipts for any credit a user may have added while logged in at a pay / pay-and-release station, and can also output notifications for any errors which may have occurred during these transactions – such as a coin box being full. Receipts and Error Notifications give users something physical to serve as a reminder, provide some much-needed evidence of any problems - in which case are a useful starting point towards resolution.

4.1 Requirements

Any printer can be used as an acknowledgement printer, however the small paper size, convenience, cost effectiveness and user familiarity of a thermal receipt printer is ideal, e.g. the Epson TM series.

As the station will be the system sending print jobs (receipt or error messages), the printer must be accessible on the network by the station.

4.2 Configuration

Three configuration files are of interest:

- `[app-path]/release/extensions/acknowledgement-printer/ack-printer.properties`, where you can configure the acknowledgement printer
- `[app-path]/release/extensions/acknowledgement-printer/ack-printer-receipt.html`, defines formatting of transaction receipts
- `[app-path]/release/extensions/acknowledgement-printer/ack-printer-error.html`, defines formatting of error reports

4.2.1 Device configuration

By default, acknowledgement printer functionality is *disabled*. To enable the feature:

1. On the machine hosting your Pay or Pay and Release Station, install the Acknowledgement Printer device as you would for any other printer. Take note of the printer's name.
2. Open `ack-printer.properties` in a text editor, such as Notepad.
3. Modify the "ack-printer.enabled" setting to "Y"
4. Modify the "ack-printer.name" setting to your acknowledgement printer's name (queue name, e.g. in Windows, as it appears in "Devices and Printers").
5. Modify the "ack-printer.receipt-mode.credit-added", "ack-printer.receipt-mode.no-credit-added" and "ack-printer.error-notification-enabled" settings as appropriate.
6. Modify the "ack-printer.width" and "ack-printer.margin" settings as appropriate for your device. Unless you know the exact paper dimensions you'll be printing to, these last few settings are best discovered through a few rounds of trial-and-error, although they will default to sensible values for an average receipt printer.
7. If you do not want the acknowledgement printer to output a brief test message each time the pay / pay-and-release station is started, set "ack-printer.perform-test-print" to "N".
8. Save and close the file.

4.2.2   Receipt template customization

Next, customize the template your receipts will use:

1. Open `ack-printer-receipt.html` in a text editor.
   This file follows the HTML document format, and all standard HTML tags are supported (eg, `<br>`, `<b>`, `<i>`, `<img>`, `<p>` etc.)
2. If you'd like images in your printouts, uncomment (remove the "`<!--`" and "`-->`" parts) the existing <img src…> line near the beginning of the file.
3. Modify the document to your heart's content. Take note of keywords within **%** symbols, eg. `%name%` or `%balance%` – when printing, these variables are substituted for real data. For the receipt template, supported variables are:

   receipt-id: a unique random number assigned to each receipt
   date: the date and time of the session
   name: the username associated with the session
   card-no: the user's card number
   pay-station-name: the name of the pay or pay-and-release station
   credit: credit added to the user's account
   balance: credit remaining on the user's account
4. Save and close the file.

4.2.3   Error template customization

Similarly, modify the template for any errors the acknowledgement printer will report (if enabled)

1. Open `ack-printer-error.html` in a text editor.
2. This file follows the same formatting as previously, however variables supported are:

   date: the date and time of the session
   name: the username associated with the session
   card-no: the user's card number
   pay-station-name: the name of the pay or pay-and-release station
   message: this variable is substituted with information about any errors that have occurred, and so could a few lines of text long. Keep this in mind when customizing your template.
3. When done, save and close the file.

5   Sample End-User Information Sheet

It is generally the administrator's task to educate users about new IT policy or system usage changes. Providing the right information and guidelines to users is important for the success of any new system. The purpose of this information sheet is to help the administrator provide the necessary information to users. The example provided is designed for use with a bill validator / note acceptor, and can be used as a starting point for your own handout.

We suggest you enhance the information sheet to include information such as:

- How to report problems (such as a coin/note unit being full or not accepting)

- Help desk details (location / phone number)

- How to provide feedback about the new system

This station allows extra credit to be added to your printing and copying account by inserting cash into the cash acceptor unit.

To add credit to your account:

1. Log in to the station using your personal username and password.

2. Click the 'Add Value' button at the top of the screen.
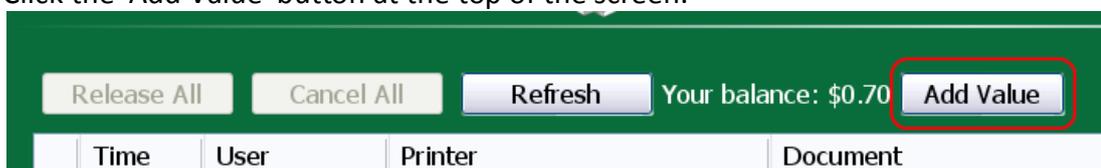
3. Follow the on-screen instructions to insert cash and add credit to your account.

4. Press the 'Done' button when you are finished.

5. You may use the credit for printing or copying immediately.

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6   Suggested Cash Collection Procedure

When dealing with devices that collect cash it is essential that the organization has a well defined procedure for its collection and auditing. We suggest using the following procedure to collect cash from a device.

6.1   Requirements

- One person is designated 'collector', and will be responsible for collecting the cash from the device, counting it and returning it to the office / cash storage location.

- The collector has access to a network login designated specifically for collecting cash (i.e. it should not be an account that is otherwise used for printing, copying or adding balance).

- A second person is designated 'approver', and will be responsible for cross-checking the collector's cash takings, depositing the cash and filing the cash reconciliation report.

6.2   Process

The collector should:

1. Log into the Pay Station using their designated account and deposit $1. This transaction will mark the end of the collection period for this device.

2. Collect the cash from the device and set it up again so that it may be used immediately.

3. Log into the PaperCut administration interface, either from the Pay Station itself or from another convenient system.

4. Navigate to `Devices → [name of device] → Transaction History`, and click `Show Filter`.

5. In the `Transacted by` field, enter their designated user name, remove the date under `From date` and press `Apply Filter`. The table will now show all transactions on this device from the collector.

6. Identify the date and time of the last transaction. This will be the transaction from step #1. This date and time should be entered into the `To date` and corresponding `Time` field.

7. Identify the date and time of the second-last transaction. This should be the collector's transaction from the previous collection period. The date and time should be entered into the `From date` and corresponding `Time` field. The time entered should be one second after this transaction so that it is not included in the data for this collection period.

8. Clear the `Transacted by` field and press `Apply Filter`. The table should now display all transactions after the previous collection, and up to and including the transaction from step #1.

9. Below the table, click `Reconciliation report`. Print the generated report.

10. Count the collected cash and fill in the printed report, including the amount collected and how much (if any) it differs from the reported amount.

11. Take the cash and signed report to the approver for cross-checking and sign-off.

After counting the cash and signing the report, the approver should:

1. Deposit the cash and file the signed report.

6.3   Modifications to Cash Collection Procedure

Some possible modifications to the above cash collection procedure include:

- If you have an accurate time source (such as a server's clock, or if workstations have their time reliably updated via NTP / "time synchronization") then there is no need to make the $1 deposits to mark the time. The collector would simply skip this step and type the accurate time directly into the `Transaction History` filter.

- For extra security you may prefer that a person other than the collector runs the reconciliation report. This ensures that the collector does not know whether there is more cash in the device than has been reported, so is unable to take advantage of the situation.

7   Troubleshooting and Investigating Overs / Unders

Differences between cash collected and recorded amounts taken (overs or unders) are possible or even common in any environment where manual cash handling or processes take place. Significant overs or unders may warrant further investigation.

Because overs or unders are common it is important that there is a well defined procedure to follow. As the situation is similar to collecting cash from other devices such as cash registers, vending machines or coin units, the organization may have an existing process which can be adapted.

Detailed transaction and operational information can be gathered from PaperCut and the Pay Station as follows:

- A full transaction history for the device can be accessed from the PaperCut administration interface, via `Devices → [name of device] → Transaction History`. The filters provided make it easy to narrow down the search to a particular time period or for a particular user.

- Event and transaction logs are also stored on the Pay Station system itself. These are located in the home directory of the user currently logged into the operating system, e.g. `C:\Documents and Settings\username`. The Pay Station maintains the following files in this directory:

  o `pay-station-transaction.log` – contains all transactions carried out on the device. It should match the device's transaction history in the administration interface (mentioned above).

  o `pay-station-event.log` – contains various information about the state of the Pay Station. If there has been an error processing a transaction it will be logged here.

  o `release-station.log` – contains more general information about the running of the Release Station and Pay Station functionality. If a serious error has occurred while running the Pay Station it will be logged here.

Feel free to contact the PaperCut Software Development Team via support@papercut.com if you require assistance.