

# PaperCut | PaperCut Payment Gateway Module - PayPal Website Payments Standard

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This guide is designed to supplement the Payment Gateway Module documentation and provides steps to install, configure, and test the Payment Gateway Module for use with PayPal's hosted credit card payment service, PayPal Website Payments Standard.

The main Payment Gateway Module documentation may be downloaded from the following page (**Payment Gateway Module - Manual**):

<https://www.papercut.com/support/payment-gateway-guides/>

## IMPORTANT:

*You should have registered an active [PayPal Business account](#) with [PayPal Website Payments Standard](#) activated before installing the Payment Gateway Module. This can be done via the [PayPal website](#). The login information will be required during the setup process.*

*Although no system-level restart is required, the PaperCut Application Server will be restarted during the installation process. If other administrators are using the PaperCut administration web interface at this time, it may be advisable to warn them of the pending restart.*

*This document is written assuming the reader has good server administration skills and is experienced with general PaperCut administration.*

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# 1 Installing the Payment Gateway Module

The Payment Gateway Module will function during the PaperCut NG/MF trial period. After this, the module must be licensed. If you have been supplied with a new license, please take the time to install this now. The license installation procedure is documented in the PaperCut manual under the 'Licensing and support' chapter:

<https://www.papercut.com/support/resources/manuals/ng-mf/common/topics/license-install.html>

1. Download the Payment Gateway Module from the following page:

<https://www.papercut.com/kb/Main/SettingupthePaymentGateway>

2. For Windows servers, install the module into the same directory as PaperCut. This is normally:

`C:\Program Files\PaperCut NG\`

Or...

`C:\Program Files\PaperCut MF\`

For macOS, Linux, and Novell servers, extract the archive and copy the contents into the following directory:

`[app-path]/server/lib-ext`

3. Open the following properties file in a text editor such as Notepad or TextEdit:

`[app-path]/server/lib-ext/ext-payment-gateway-paypal.properties`

4. Locate the following line:

`paypal.enabled=N`

Change the N to Y. This will enable the PaperCut PayPal WPS integration.

5. Locate the following line:

`paypal.id=`

Append your PayPal ID at the end of the line, with no spaces.

6. Ensure that the `paypal.currency` configuration key is set to the correct currency for payments you will be accepting (this is set to USD by default).

7. Configure other options in this file as required, which allow you to define the following (examples of how to use the corresponding configuration keys can be found in the properties file itself):
  - The item name which will appear on the users receipt for the transaction.
  - A shared secret (see section 5.)
  - The text which appears on the menu item for payments in the PaperCut user web interface.
  - The text which appears on the top of the payments page in the PaperCut user web interface.
  - The PaperCut Groups which have access to make payments.
  - The denominations a user is able to make payments in.
  - A list of IP addresses from which we will accept an IPN from PayPal.
  - Whether or not the PaperCut PayPal WPS integration will listen on port 80 for IPN messages.
  - The URL which will process our transactions (note: this should not be changed from the default value of <https://www.paypal.com/cgi-bin/webscr> unless otherwise instructed by PaperCut).
  - A URL which PayPal will redirect a user to after a transaction has finished processing.
  - An overriding IPN URL for PayPal to use for Instant Payment Notifications.
  - The details of any proxy server being used for internet outbound connections.

Further options configured at a global payment gateway level can be found in section 2.1 of the main Payment Gateway Module documentation (**Payment Gateway Module - Manual**), which may be downloaded from the following page:

<https://www.papercut.com/support/payment-gateway-guides/>

You may like to initially enable a group restriction to limit access to administrators until configuration is complete.

8. Save the file and exit the text editor.
9. Restart the PaperCut Application Server by referring to the following page:  
<https://www.papercut.com/support/resources/manuals/ng-mf/common/topics/tools-start-stop-app.html>
10. Inspect the end of the Application Server log file at [app-path]/server/logs/server.log for any obvious error messages as the result of this change.

## 2 Network / Firewall Configuration

PayPal sends transaction notification messages to the PaperCut Application Server using a feature called Instant Payment Notification (IPN).

When someone makes a payment to your PayPal Business account, PayPal will send a notification of the payment to a URL specified in your PayPal Business account settings; we will refer to this as the IPN URL. Part of the configuration process involves defining an IPN URL which points to your PaperCut Application Server. When PayPal sends these notifications to the IPN URL, PaperCut will receive them and send a postback response to PayPal, ensuring the transaction is processed successfully.

In order to facilitate this two-way communication between PayPal and the PaperCut Application Server, there are network and firewall configuration requirements as specified below:

### Network requirements for Instant Payment Notifications FROM PayPal TO the PaperCut Application server:

PayPal supports the use of HTTPS for IPN messages, and we recommend that this protocol, as well as the HTTPS port your PaperCut Application Server has been configured to utilize be explicitly specified in the IPN URL. This will ensure these communications are secured.

By default, the HTTPS port that the PaperCut internal web server will listen on is 9192, though if you have changed it please bear this in mind. Information about changing the ports that the PaperCut internal web server uses can be found on the following page:

<https://www.papercut.com/support/resources/manuals/ng-mf/common/topics/sys-security-options-change-ports.html>

If a protocol and port is not specified in the IPN URL, PayPal will default to using an HTTP connection over port 80. The PaperCut PayPal WPS integration can itself be configured to listen on port 80 in the `ext-payment-gateway-paypal.properties` file by setting the `paypal.enable-port-80` configuration key to `Y`, though it is no longer recommended, and is disabled by default due to security concerns.

You will need to set up an internet-accessible hostname on the port you intend to specify, which will then form part of the IPN URL. This will usually involve the following tasks:

1. Set up a public DNS entry to ensure the PaperCut server is publicly accessible (for example: `papercut.myorg.edu`).
2. Either:
  - a. Allow internet access directly to the PaperCut server over the HTTPS port which PaperCut is configured to listen on (9192 by default), or
  - b. Set up external firewall rules to port forward from the public address on another port to the PaperCut server HTTPS port. This is generally the preferred option on Linux, Mac or Novell.

It is important that the firewall policy only applies to external hosts. Internal hosts will require direct access to the PaperCut server.

During testing it may be appropriate to open access from any host then lock down access to the PayPal's server IP addresses later. Incoming messages from PayPal will be sent from **notify.paypal.com**. PayPal maintains a list of

IP addresses for this hostname on the following page:

<https://www.paypal.com/us/smarthelp/article/what-are-the-ip-addresses-for-live-paypal-servers-ts1056>

Please note that PayPal may change these addresses over time, so if transactions are failing, check PayPal's IPN history section to see if the messages are not being communicated successfully.

You should now test this external connection by entering the following URL in a web browser. If successful, a simple confirmation page will be displayed, including the current time. For HTTPS connections (where <ssl\_port> is the secure port PaperCut is configured to listen on, or the external port you might have configured in 2.b.):

[https://papercut.myorg.edu:<ssl\\_port>/rpc/gateway/paypal-wps](https://papercut.myorg.edu:<ssl_port>/rpc/gateway/paypal-wps)

### **Network requirements for postback responses FROM the PaperCut Application Server TO PayPal:**

You will need to ensure the PaperCut Application Server can reach the following URL, as this is where PaperCut submits an IPN postback to PayPal:

<https://www.paypal.com/cgi-bin/webscr>

You may note that PayPal specifies that IPN postbacks be sent to **ipnpb.paypal.com**, though at present, the PaperCut PayPal WPS integration does not submit postbacks to this URL. The URL specified above will still correctly handle postback messages.

### 3 PayPal Configuration

1. Log into your PayPal Business account.
2. Navigate to the top right corner and click on the **cog**. You should be prompted with a dropdown menu: Click on **Account settings**.
3. On the left-hand side, under the **Business Profile**, select the **Notifications** option.
4. Under the **Instant Payment Notifications** section, click **Update**, followed by **Choose IPN settings / Edit Settings**.
5. In the **Notification URL** field enter the following if using HTTPS / port 9192, where papercut.myorg.edu is the external hostname of your PaperCut server.

<https://papercut.myorg.edu:9192/rpc/gateway/paypal-wps>

If you wish to use HTTP, or another port, you can easily modify this URL as desired.

6. Select **Receive IPN messages (Enabled)** and click **Save**.

When PaperCut receives an IPN from PayPal it responds to acknowledge the message. If your PaperCut server has multiple external IP addresses, it is important that the response be sent from the same IP address that PayPal sent the IPN to (for example: if PayPal sends the IPN to 1.1.1.2 it should not receive a reply from 1.1.1.3). If PayPal receives the response from a different IP address it will ignore it, which will prevent the transactions from being processed correctly.

7. Navigate to the top right corner and click on the **cog**. You should be prompted with a dropdown menu: Click on **Account Settings**.
8. On the left-hand side, under the **Products & Services** section, click on the **Website payments** option.
9. Next to the **PayPal Button Language Encoding** section, click the **Update** button\*.
10. Click on the **More Options** button and select **UTF-8** from the dropdown list.
11. Click **Save** to save the encoding settings.

\*If you cannot find the language encoding page, you can access this page directly here:

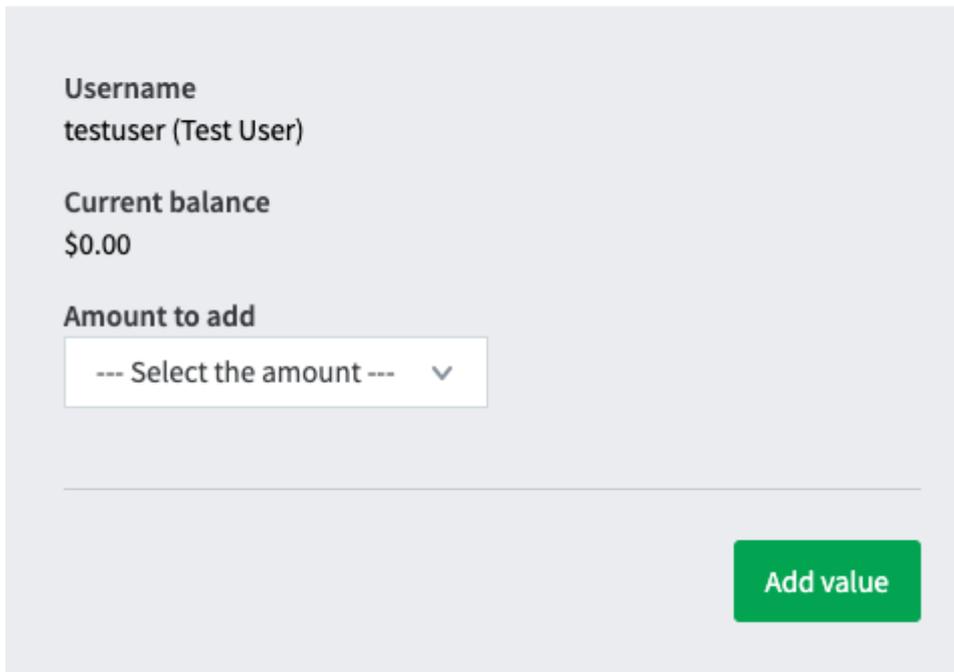
[https://www.paypal.com/cgi-bin/webscr?cmd=\\_profile-language-encoding](https://www.paypal.com/cgi-bin/webscr?cmd=_profile-language-encoding)

## 4 Testing

The Payment Gateway Module is now ready for testing. This test will involve performing a live transaction with a real credit card, testing real-world end-to-end functionality. The payment may be refunded afterwards via the PayPal Business account interface. Please note that transaction fees may still apply.

1. Log into the PaperCut user web interface at <http://papercutserver:9191/user>, where `papercutserver` is the IP address or hostname of your PaperCut Application Server.
2. A new link called **Add Credit** should be present on the left. Click this link.
3. Select an amount to add and click **Add Value**.

### Add credit using PayPal



The screenshot shows a user interface for adding credit. It displays the following information:

- Username:** testuser (Test User)
- Current balance:** \$0.00
- Amount to add:** A dropdown menu with the text "-- Select the amount --" and a downward arrow.
- Add value:** A green button with the text "Add value".

4. You should now be redirected to PayPal for payment. Enter the payment details including a valid credit card number and associated details as requested.
5. After entering payment details you should be presented with a success (or failure) page with a printable receipt link. At this stage the payment should have already taken place, and PayPal has contacted PaperCut via the IPN feature to report the transaction (causing PaperCut to add the designated value to the users account).

There should also be a **Return** button. Click this to return to PaperCut.

6. You should now be back at the **Add Credit** page. You should see a green message indicating that the funds were added to your account, and the **Current Balance** should show your new account balance. The **Transaction History** page should contain the payment transaction.

**Note:** It is possible in times of network congestion or a communication failure that the PayPal IPN has not yet been sent to PaperCut by the time the user returns to the **Add Credit** page. In this case an appropriate message will be displayed to the user, and their balance will be updated when the IPN arrives (see section 7.1 for more information).

7. The transaction should appear in the PayPal Business account interface, and may now be refunded.

## 5 Securing the System

Because PayPal sends the IPN transaction data to PaperCut directly (not along with the user), users are not provided with an opportunity to tamper with the order data. It is however possible for users who know the IPN URL to 'spoof' a transaction if they know the right data and format. This risk can be mitigated by:

1. Restricting the IPN URL so that it can only be called by PayPal's server IP addresses (see the `paypal.postback-allowed-ip` configuration key in the properties file).
2. Implementing a *shared secret*. This is a secret token/password that is known only to PayPal and the PaperCut Application Server, and never exposed to the user. If defined, PaperCut will only accept IPN messages that contain the shared secret, so that a user can only forge IPN messages if they also know it. To implement the IPN shared secret:

- a. Find the `paypal.shared-secret` configuration key in the properties file and assign a random alphanumeric string that will serve as the secret/password. For example:

```
paypal.shared-secret=1n2bxn5h
```

- b. Update the IPN notification URL in the PayPal merchant interface and append a slash and your shared secret to the end. For example:

```
http://papercut.myorg.edu/rpc/gateway/paypal-wps/1n2bxn5h
```

- c. IPN messages should now only be accepted if they contain the configured shared secret. If you like you can try entering the wrong shared secret in the IPN URL to ensure that it is rejected. Note that this will result in a charge in the PayPal Business account, but no transaction on the PaperCut Application Server. In this scenario, an error message will be written to the Application Server log (see section 7).

## 6 Go-Live

If a group restriction was enabled in section 1.7, it can now be removed or altered to allow access to end-users. Your system is now live and will accept and charge credit cards.

## 7 Troubleshooting

Administrators may find information in the following log files useful when trying to troubleshoot setup and configuration problems, or issues reported by end-users:

**Payment Gateway Event Log:**

[app-path]\server\logs\payment-gateway\event.log

This log contains gateway specific error messages and events.

**Application Server Log:**

[app-path]\server\logs\server.log

This log contains general application specific error messages and events.

**Transaction Log:**

[app-path]\server\logs\payment-gateway\transaction.log

This log contains a list of successful transactions in a tab-delimited form.

These are also defined on the following page:

<https://www.papercut.com/kb/Main/PaymentGatewayLogs>

If using PaperCut MF, you may also contact your Reseller or Authorized Solution Center for assistance. You can find the contact details of these organizations in the PaperCut administration web interface on the **About** pane.

### 7.1 PayPal Charging Correctly, Balances Not Updated in PaperCut

If PayPal is charging cards/accounts successfully, but no balances are being updated in PaperCut, there is most likely a problem with the IPN messages being delivered from PayPal to the PaperCut Application Server.

1. Login to your PayPal Business account and navigate to the top right corner and click on the **cog**. You should be prompted with a dropdown menu: Click on **Account Settings**.
2. On the left-hand side, under **Business Profile**, select the **Notifications** option.
3. Under the **Instant Payment Notifications** section, click **Update**, followed by **IPN History page**.

This page lists the IPN messages that PayPal has attempted to send to the configured IPN URL. Ensure that the IPN that matches the transaction has a status of **Sent**. Any other status indicates that the IPN didn't get through. This may be temporary (PayPal will retry at intervals for up to 4 days), or it may indicate a connectivity problem. Ensure that the IPN Notification URL is accessible from the internet.

4. If the IPN was marked as **Sent**, check the Payment Gateway Event Log file (see section 7) for error messages. If there are no obvious messages, you can reproduce the problem with debug logging enabled in the Application Server Log to see more information about the messages sent and received.