



Instant Payment Notification Manual

A hands-on guide to understanding and
using Instant Payment Notification

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PayPal Instant Payment Notification Manual
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Introduction to Instant Payment Notification (IPN)

Automate online payments with back-end server-to-server integration

PayPal's Instant Payment Notification (IPN) allows you to integrate PayPal payments with your website's back-end operations. IPN provides immediate notification and confirmation of PayPal payments you receive, allowing you to:

- Customize your website's response to customer purchases in real-time.
- Track customers through the notification's "pass through" variables.
- Automate your fulfillment operations.
- Store transaction information in your own database.

Once you activate IPN, you will receive an IPN when a payment is first sent which will state the status of the payment (Completed or Pending). If the payment was "Pending," you will receive another IPN when the payment clears, fails, or is denied.

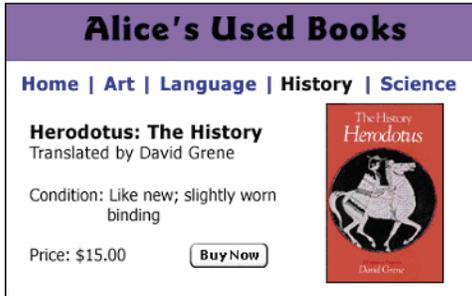
IPN can be seamlessly integrated with each of the PayPal Website Payments solutions (Buy Now Buttons, PayPal Shopping Cart, Subscriptions and Recurring Payments, and Donations), as well as with regular PayPal "Send Money" payments, and lets you focus on selling, not on manually tracking your orders.

Get the most out of your online business today: start using IPN.

IPN in Action

How IPNs are sent

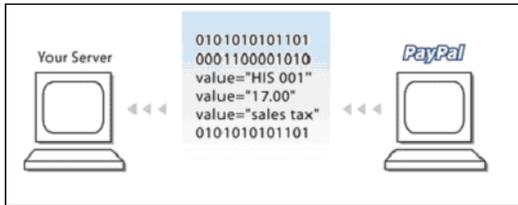
Step 1: Your buyer comes to your website and clicks on a PayPal **Buy Now** button to make a purchase.



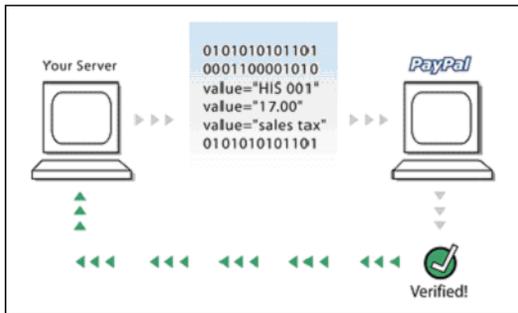
Step 2: After your buyer checks the payment details and sends the payment, he will see a confirmation page, as shown in the following diagram.



Step 3: At the time the payment is made, PayPal will post a notification to your server at the URL you specified. All of your customer's payment information and a piece of encrypted code will be included in this notification.



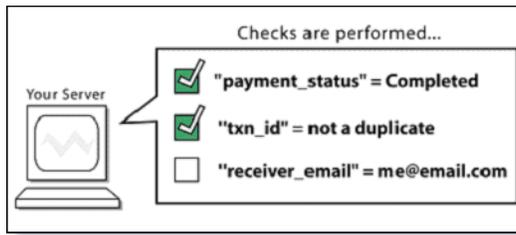
Step 4: On receiving the notification, your server will send the information, including the encrypted code, back to a secure PayPal URL. PayPal will authenticate the transaction by checking the encrypted string. This post-back of the IPN data to PayPal prevents "spoofing," so you can be sure the IPN came from PayPal. Upon verification, PayPal will send your server a "VERIFIED" or "INVALID" response.



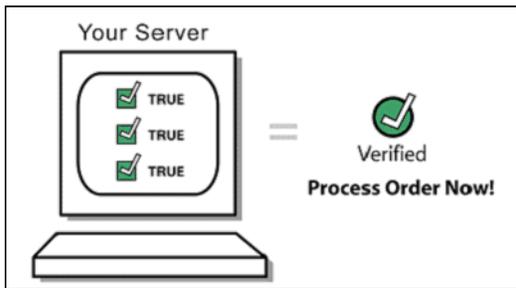
Step 5: When you receive a VERIFIED response, you need to perform several checks before fulfilling the order.

Note: An INVALID response should be treated as suspicious, and should be investigated.

- Confirm that the payment status is **Completed**, since IPNs are also sent for status types such as **Pending** or **Failed**.
- Check that the transaction ID is not a duplicate — this prevents a fraudster from using an old, completed transaction.
- Validate that the `receiver_email` is truly your account — this prevents the payment from being sent to a fraudster's account.
- Check other transaction details, such as item number and price, to confirm that the price hasn't been changed.



Step 6: After successfully completing the checks, you can update your database with the IPN data and process the purchase.



Instant Payment Notification

Back-end server-to-server integration

Instant Payment Notification allows you to integrate your PayPal payments with your website's back-end operations, so you get immediate notification and authentication of the PayPal payments you receive.

Note: To activate Instant Payment Notification, you will need to go to your Profile to enter the URL at which you would like to receive notification posts. For more information, please refer to the *Setting Up IPN* section of this document, which begins on page 13.

How It Works

When a customer makes a payment to you or a payment is reversed or refunded, PayPal will post a notification to your server at the URL you specified. Included in this notification will be all of your customer's payment information (e.g. customer name, payment amount) as well as a piece of encrypted code. When your server receives a notification, it will then post the information, including the encrypted code, back to a secure PayPal URL. PayPal will authenticate the transaction and send confirmation of its validity back to your server.

After you have activated Instant Payment Notification, your server will be sent a notification every time you receive a payment. This notification will be sent as a hidden "FORM POST" to the URL you specified, and will include all of the payment information. The FORM variables for these notifications are listed in the following table.

IPN Variables

The following variables work for all Send Money, Buy Now, PayPal Donations, and PayPal Shopping Cart IPNs. If you are using IPN to receive Subscriptions payment notifications, you will need to support additional variables. Please note that the IPN variables are case-sensitive. Most values are lower-case, but `payment_status` is non-standard with the first letter capitalized (e.g., Completed). For more information on these additional variables, please refer to the *Variables for Each Subscription Type* section of this document, which begins on page 17.

Restrictions on Field Lengths and Data Types

IPN posts contain only alphanumeric characters. The maximum field length for each returned field is 127 characters, with the exception of the `custom` field, which has a maximum length of 255 characters. The unique PayPal Transaction ID will always be 17 characters long.

Variable	Value	Description
Basic Information		
business	Transaction-specific	Email address or account ID of the payment recipient (i.e., the merchant). Equivalent to <code>receiver_email</code> if payment is sent to primary account, and essentially an echo of the <code>business</code> variable passed in the Website Payment button HTML code.
receiver_email	Transaction-specific	Primary email address of the payment recipient (i.e., the merchant). If the payment is sent to a non-primary email address on your PayPal account, the <code>receiver_email</code> will still be your primary email.
receiver_id	Transaction-specific	Unique account ID of the payment recipient (ie., the merchant). This is the same as the recipient's referral ID.
item_name	Transaction-specific	Item name as passed by you, the merchant. Or, if not passed by you, as entered by your customer. If this is a shopping cart transaction, PayPal will append the number of the item (e.g., <code>item_name1</code> , <code>item_name2</code>).
item_number	Transaction-specific	Item number as passed by you, the merchant. If this is a shopping cart transaction, PayPal will append the number of the item (e.g., <code>item_number1</code> , <code>item_number2</code>).
quantity	Transaction-specific	Quantity as entered by your customer or as passed by you, the merchant. If this is a shopping cart transaction, we will append the number of the item (e.g. <code>quantity1</code> , <code>quantity2</code>).
Advanced and Custom Information		
invoice	Transaction-specific	Invoice number as passed by you, the merchant. Your customer is not able to view or edit this. It must be unique per transaction.
custom	Transaction-specific	Custom value as passed by you, the merchant. These are pass-through variables that are never presented to your customer
memo	Transaction-specific	Memo as entered by your customer in PayPal Website Payments note field.
tax	Transaction-specific	Amount of tax charged on payment.
option_name1	Transaction-specific	Option 1 name as requested by you.
option_selection1	Transaction-specific	Option 1 choice as entered by your customer.

Variable	Value	Description
option_name2	Transaction-specific	Option 2 name as requested by you.
option_selection2	Transaction-specific	Option 2 choice as entered by your customer.
Shopping Cart Information		
num_cart_items	Transaction-specific for PayPal Shopping Cart	If this is a PayPal Shopping Cart transaction, number of items in cart.
Transaction Information		
payment_status	"Canceled_Reversal"	This means a reversal has been canceled; for example, you, the merchant, won a dispute with the customer and the funds for the transaction that was reversed have been returned to you.
	"Completed"	If referring to an initial purchase, this means the payment has been completed and the funds have successfully been added to your account balance.
	"Denied"	You, the merchant, denied the payment. This will only happen if the payment was previously pending due to one of the following pending reasons.
	"Failed"	The payment has failed. This will only happen if the payment was made from your customer's bank account.
	"Pending"	The payment is pending; see the <code>pending_reason</code> variable for more information. Please note, you will receive another Instant Payment Notification when the status of the payment changes to "Completed," "Failed," or "Denied."
	"Refunded"	You, the merchant, refunded the payment.
	"Reversed"	This means that a payment was reversed due to a chargeback or other type of reversal. The funds have been removed from your account balance and returned to the customer. The reason for the reversal is given by the <code>reason_code</code> variable.

Variable	Value	Description
pending_reason	This variable is set only if <code>payment_status = Pending</code> .	
	"address"	The payment is pending because your customer did not include a confirmed shipping address and you, the merchant, have your Payment Receiving Preferences set such that you want to manually accept or deny each of these payments. To change your preference, go to the Preferences section of your Profile.
	"echeck"	The payment is pending because it was made by an eCheck, which has not yet cleared.
	"intl"	The payment is pending because you, the merchant, hold a non-U.S. account and do not have a withdrawal method. You must manually accept or deny this payment from your Account Overview.
	"multi_currency"	You do not have a balance in the currency sent, and you do not have your Payment Receiving Preferences set to automatically convert and accept this payment. You must manually accept or deny this payment.
	"unilateral"	The payment is pending because it was made to an email address that is not yet registered or confirmed.
	"upgrade"	The payment is pending because it was made via credit card and you, the merchant, must upgrade your account to Business or Premier status in order to receive the funds. You could also get this status because you, the merchant, have reached the monthly limit for transactions on your account.
	"verify"	The payment is pending because you, the merchant, are not yet Verified. You must verify your account before you can accept this payment.
	"other"	The payment is pending for a reason other than those listed above. For more information, contact customer service at https://www.paypal.com/cgi-bin/webscr?cmd=_contact-general .

Variable	Value	Description
reason_code	This variable is only set if payment_status = "Reversed" or "Refunded".	
	"buyer_complaint"	A reversal has occurred on this transaction due to a complaint about the transaction from your customer.
	"chargeback"	A reversal has occurred on this transaction due to a chargeback by your customer.
	"guarantee"	A reversal has occurred on this transaction due to your customer triggering a money-back guarantee.
	"refund"	A reversal has occurred on this transaction because you have given the customer a refund.
	"other"	A reversal has occurred on this transaction for a reason other than those previously listed.
payment_date	Transaction-specific	Time/Date stamp generated by PayPal system [format: "18:30:30 Jan 1, 2000 PST"]
txn_id	Transaction-specific	A unique transaction ID generated by the PayPal system.
parent_txn_id	Transaction-specific	In the case of a refund, reversal, or canceled reversal, this variable contains the txn_id of the original transaction, while txn_id contains a new ID for the new transaction.
txn_type	"cart"	This payment was sent by your customer via the PayPal Shopping Cart.
	"send_money"	This payment was sent by your customer from the PayPal website, using the Send Money tab.
	"web_accept"	The payment was sent by your customer via Buy Now Buttons, Donations, or Smart Logos.
payment_type	"echeck"	This payment was funded with an eCheck.
	"instant"	This payment was funded with PayPal balance, credit card, or Instant Transfer.

Variable	Value	Description
Currency and Exchange Information		
mc_gross	Transaction-specific for Multiple Currencies	Full amount of the customer's payment, before transaction fee is subtracted. Equivalent to <code>payment_gross</code> for USD payments. If this amount is negative, it signifies a refund or reversal, and either of those payment statuses can be for the full or partial amount of the original transaction.
mc_fee	Transaction-specific for Multiple Currencies	Transaction fee associated with the payment. <code>mc_gross</code> minus <code>mc_fee</code> will equal the amount deposited into the <code>receiver_email</code> account. Equivalent to <code>payment_fee</code> for USD payments. If this amount is negative, it signifies a refund or reversal, and either of those payment statuses can be for the full or partial amount of the original transaction fee.
mc_currency	For payment IPNs, this is the currency of the payment. For non-payment subscription IPNS, this is the currency of the subscription.	
	"USD"	The currency of the payment is U.S. Dollars.
	"GBP"	The currency of the payment is Pounds Sterling.
	"USD"	The currency of the payment is U.S. Dollars.
	"GBP"	The currency of the payment is Pounds Sterling.
	"EUR"	The currency of the payment is Euros.
	"CAD"	The currency of the payment is Canadian Dollars.
	"JPY"	The currency of the payment is Yen.
settle_amount	Transaction-specific	Amount that is deposited into the account's primary balance after a currency conversion from automatic conversion (through your Payment Receiving Preferences) or manual conversion (through manually accepting a payment).
settle_currency	Transaction-specific for Multiple Currencies	Currency of <code>settle_amount</code> .
exchange_rate	Transaction-specific for Multiple Currencies	Exchange rate used if a currency conversion occurred.

Variable	Value	Description
payment_gross	Transaction-specific for USD payments only	Full USD amount of the customer's payment, before transaction fee is subtracted. Will be empty for non-USD payments. This is a legacy field replaced by mc_gross. If this amount is negative, it signifies a refund or reversal, and either of those payment statuses can be for the full or partial amount of the original transaction.
payment_fee	Transaction-specific for USD payments only	USD transaction fee associated with the payment. payment_gross minus payment_fee will equal the amount deposited into the receiver email account. Will be empty for non-USD payments. This is a legacy field replaced by mc_fee. If this amount is negative, it signifies a refund or reversal, and either of those payment statuses can be for the full or partial amount of the original transaction fee.
Auction Information		
for_auction	"true"	This is an auction payment—payments made using Pay for eBay Items or Smart Logos—as well as Send Money/Money Request payments with the type eBay items or Auction Goods (non-eBay) .
auction_buyer_id	Transaction-specific for Auctions	This is the customer's auction ID.
auction_closing_date	Transaction-specific for Auctions	This is the auction's close date.
auction_multi_item	Transaction-specific for Auctions	This is a counter used for multi-item auction payments. It allows you to customize your script to only count the mc_gross or payment_gross for the first IPN you receive from a multi-item auction (auction_multi_item), since each item from the auction will generate an Instant Payment Notification showing the amount for the entire auction.
Buyer Information		
first_name	Transaction-specific	Customer's first name.
last_name	Transaction-specific	Customer's last name.
payer_business_name	Transaction-specific	Customer's company name.

Variable	Value	Description
address_name	Transaction-specific	Name used with address (Included when the customer provides a Gift Address).
address_street	Transaction-specific	Customer's street address.
address_city	Transaction-specific	City of customer's address.
address_state	Transaction-specific	State of customer's address.
address_zip	Transaction-specific	Zip code of customer's address.
address_country	Transaction-specific	Country of customer's address.
address_status	"confirmed"	Customer provided a confirmed address.
	"unconfirmed"	Customer provided an unconfirmed address.
payer_email	Transaction-specific	Customer's primary email address. Use this email to provide any credits.
payer_id	Transaction-specific	Unique customer ID.
payer_status	"verified"	Customer has a Verified PayPal account.
	"unverified"	Customer has an Unverified PayPal account.
IPN Information		
notify_version	"1.6"	The version of the Instant Payment Notification you are using.
Security Information		
verify_sign	Transaction-specific	An encrypted string used to validate the authenticity of the transaction.

Using IPN

Getting set up to use IPN and validate notifications

Setting up IPN

To set up IPN:

1. Log in to your Business or Premier PayPal account.
2. Click the **Profile** subtab.
3. Click on the **Instant Payment Notification Preferences** link in the **Selling Preferences** column.
4. Click **Edit**.
5. Click the checkbox and enter the URL at which you would like to receive your IPN Notifications.
6. Click **Save**.

Notification Validation

To ensure that a payment has been made into your PayPal account, you **must** verify that the email address used as your `receiver_email` has been registered and confirmed in your PayPal account.

Once your server has received the Instant Payment Notification, you will need to confirm it by constructing an HTTP POST to PayPal. Your POST should be sent to <https://www.paypal.com/cgi-bin/webscr>. This post-back of the IPN data to a secure PayPal URL (i.e., `https://`) prevents 'spoofing,' so you can be sure that the IPN came from PayPal.

Note: It is possible to implement IPN without SSL (i.e., `http://`), but then the IPN data that is received and posted back is not secure.

You must post all of the form variable you received exactly as you received them. You will also need to append a variable named `cmd` with the value `_notify-validate` (e.g., `cmd=_notify-validate`) to the POST string.

PayPal will respond to the post with a single word, "VERIFIED" or "INVALID," in the body of the response.

When you receive a VERIFIED response, perform the following checks:

1. Check that the `payment_status` is **Completed**.
2. If the `payment_status` is **Completed**, check the `txn_id` against the previous PayPal transaction you have processed to ensure it is not a duplicate.
3. After you have checked the `payment_status` and `txn_id`, make sure the `receiver_email` is an email address registered in your PayPal account.
4. Check that the price, `mc_gross`, and currency, `mc_currency`, are correct for the item, `item_name` or `item_number`.
5. (Optional) To be 100% certain of the authenticity of this transaction, you can check PayPal's digital certificate if you are using SSL:

```
/C=US/ST=California/L=Palo Alto/O=PayPal, Inc./OU=Information Systems/  
CN=www.paypal.com
```

Once you have completed the above checks, you may update your database based on the information provided.

If you receive an INVALID response, you should investigate. In some cases, this response is caused by an IPN error, possibly from a change in the IPN format. To determine if it is an IPN error, first examine your code. If you need further assistance, go to <http://www.paypal.com/wf/>, click the **Seller Tools** topic, and then click **Instant Payment Notification (IPN)**.

Specifying Your Notification URL

If you only need to receive your IPNs at a single URL, you can enter that URL in the **Preferences** section of your Profile.

If you would like to receive payment notifications for different payments at different URLs (i.e. if you need to separate payments made to different websites you run), you can manually pass the IPN URL with each payment by including it in that payment's HTML code. Use the `notify_url` field to pass this information.

The `notify_url` for a specific payment will be saved, and any subsequent updates to that payment (e.g. cleared eCheck) will be sent to that `notify_url`. When you pass a `notify_url` in your HTML code, it will override any preferences you set in your Profile.

Using IPN with Subscriptions and Recurring Payments

Additional information if you receive PayPal Subscriptions payments

Subscriptions Variables

In addition to the variables listed in the previous table, the following variables are included in Subscriptions IPNs:

Variable	Value	Description
txn_type	"subscr_signup"	This IPN is for a subscription sign-up.
	"subscr_cancel"	This IPN is for a subscription cancellation.
	"subscr_failed"	This IPN is for a subscription payment failure.
	"subscr_payment"	This IPN is for a subscription payment.
	"subscr_eot"	This IPN is for a subscription's end-of-term.
	"subscr_modify"	This IPN is for a subscription modification.
subscr_date	Transaction-specific	Start date or cancellation date depending on whether transaction is subscr_signup or subscr_cancel.
subscr_effective	Transaction-specific	Date when the subscription modification will be effective (only for txn_type = subscr_modify).
period1	Transaction-specific	(optional) Trial subscription interval in days, weeks, months, years (example: a 4 day interval is "period1: 4 D").
period2	Transaction-specific	(optional) Trial subscription interval in days, weeks, months, or years.
period3	Transaction-specific	Regular subscription interval in days, weeks, months, or years.
amount1	Transaction-specific	Amount of payment for trial period 1 for USD payments; otherwise blank (optional).
amount2	Transaction-specific	Amount of payment for trial period 2 for USD payments; otherwise blank (optional).
amount3	Transaction-specific	Amount of payment for regular subscription period for USD payments; otherwise blank.
mc_amount1	Transaction-specific	Amount of payment for trial period 1, regardless of currency (optional).
mc_amount2	Transaction-specific	Amount of payment for trial period 2, regardless of currency (optional).

Variable	Value	Description
mc_amount3	Transaction-specific	Amount of payment for regular subscription period, regardless of currency.
mc_currency	For non-payment subscriptions IPNs (i.e., <code>txn_type</code> = <code>signup</code> , <code>cancel</code> , <code>failed</code> , <code>eot</code> , or <code>modify</code>), this is the currency of the subscription. For payment IPNs, it is the currency of the payment (i.e., <code>txn_type</code> = <code>subscr_payment</code>)	
	"USD"	The currency of the subscription is U.S. Dollars.
	"GBP"	The currency of the subscription is Pounds Sterling.
	"EUR"	The currency of the subscription is Euros.
	"CAD"	The currency of the subscription is Canadian Dollars.
	"JPY"	The currency of the subscription is Yen.
recurring	Transaction-specific	Indicates whether regular rate recurs (1 is yes, blank is no).
reattempt	Transaction-specific	Indicates whether reattempts should occur upon payment failures (1 is yes, blank is no).
retry_at	Transaction-specific	Date PayPal will retry a failed subscription payment.
recur_times	Transaction-specific	The number of payment installments that will occur at the regular rate.
username	Transaction-specific	(optional) Username generated by PayPal and given to subscriber to access the subscription.
password	Transaction-specific	(optional) Password generated by PayPal and given to subscriber to access the subscription (password will be hashed).
subscr_id	Transaction-specific	ID generated by PayPal for the subscriber.

Variables for Each Subscription Type

The following table shows which variables are associated, and may be included, with each transaction type. Please note that the IPN will only contain variables for which it has information.

Variable	Signup	Cancel	Modify	Payment (USD)	Payment (MC)	Failed	EOT
Basic Information							
business	X	X	X	X	X	X	X
receiver_email	X	X	X	X	X	X	X
receiver_id				X	X		
item_name	X	X	X	X	X	X	X
item_number	X	X	X	X	X	X	X
Advanced and Custom Information							
invoice	X	X	X	X	X	X	X
custom	X	X	X	X	X	X	X
option_name1	X	X	X	X	X	X	X
option_selection1	X	X	X	X	X	X	X
option_name2	X	X	X	X	X	X	X
option_selection2	X	X	X	X	X	X	X
Transaction Information							
payment_status				X	X		
pending_reason				X	X		
reason_code				X	X		
payment_date				X	X		
txn_id				X	X		
parent_txn_id				X	X		
txn_type	subscr_signup	subscr_cancel	subscr_modify	subscr_payment			
Currency and Exchange Information							
mc_gross				X	X		
mc_fee				X	X		
mc_currency	X	X	X	X	X	X	X
settle_amount				X	X		
settle_currency				X	X		
exchange_rate				X	X		
payment_gross				X		X	X
payment_fee				X			

Variable	Signup	Cancel	Modify	Payment (USD)	Payment (MC)	Failed	EOT
Buyer Information							
first_name	X	X	X	X	X	X	X
last_name	X	X	X	X	X	X	X
payer_business_name				X	X		
address_name	X	X	X	X	X		
address_street	X	X	X	X	X		
address_city	X	X	X	X	X		
address_state	X	X	X	X	X		
address_zip	X	X	X	X	X		
address_country	X	X	X	X	X		
address_status	X	X	X	X	X		
payer_email	X	X	X	X	X	X	X
payer_id	X	X	X	X	X	X	X
payer_status	X	X	X	X	X	X	X
payment_type				X	X		
IPN Information							
notify_version	X	X	X	X	X	X	X
Security Information							
verify_sign	X	X	X	X	X	X	X
Subscription Information							
subscr_date	X	X	X				
subscr_effective			X				
period1	X	X	X				
period2	X	X	X				
period3	X	X	X				
amount1	X	X	X				
amount2	X	X	X				
amount3	X	X	X				
mc_amount1	X	X	X				
mc_amount2	X	X	X				

Variable	Signup	Cancel	Modify	Payment (USD)	Payment (MC)	Failed	EOT
mc_amount3	X	X	X				
recurring	X	X	X				
reattempt	X	X	X				
retry_at						X	
recur_times	X	X	X				
username	X	X	X	X	X	X	X
password	X	X	X	X	X	X	X
subscr_id	X	X	X	X	X	X	X

Testing IPN

You should always test your IPN implementation with the live PayPal system. Here's an easy way to do it:

1. Sign up for a Personal PayPal account if you don't already have one, and add a credit card to the account. This will be your "buyer" account.

Note: According to the PayPal User Agreement, you may have one Personal and one Premier/Business account. Please do not set up any additional PayPal accounts, as this may result in your account access being limited.

2. Make sure that your Business/Premier account is Verified. This is the account which uses IPN, your "seller" account.
3. Log in to your buyer account and send money to your seller account, as if you were making a regular payment. You can send a very small amount, such as \$0.01.
4. Check the results of your IPN test.
5. Log in to your seller account and refund the payment. To refund a payment, go to the **Transaction Details** page and click the **Refund Payment** link at the bottom. The refund reverses the entire payment, including transaction fees. Remember that you only have 30 days to refund the payment.

This testing method is free of charge and lets you complete the entire process yourself. If you would prefer not to open a second PayPal account, you can also have friends or trusted clients send you test payments, which you can then refund.

Testing tip 1: PayPal recommends you start with one of PayPal's code samples available at <https://www.paypal.com/ipn> under the **Code Samples** section. There are code samples for the following development environments.

- ASP/VBScript
- ColdFusion
- Java/JSP
- PERL
- PHP

Testing tip 2: In your **Website Payments** button HTML code, add or modify the `return` and `rm` variables as follows (replacing the URL with the URL for your website):

```
<input type="hidden" name="return" value="http://www.mysite.com">  
<input type="hidden" name="rm" value="2">
```

Then, from the buyer account, click on the **Website Payments** button and complete the transaction. Once you get to the PayPal **Payment Complete** page, you can use your browser's View Source function to view the values of the posted IPN variables at the bottom of the code.

Testing tip 3: You can put debugging print statements into your IPN script. PayPal recommends creating a debugging mode of your script that you can turn off and on by commenting or uncommenting a variable. Set the `return` variable in your **Website Payments** button HTML code to point to your IPN URL. When you complete the payment, the output of your script's print statements will be sent to your browser.

Using IPN with Multiple Currencies

With multiple currencies, you can accept payments in U.S. Dollars, Canadian Dollars, Euros, Pounds Sterling, and Yen. As a result, your IPNs will then include information about the currency of the payment. The following overview explains how IPN interacts with multiple currencies.

Note: If you are using one of PayPal's Website Payments solutions (e.g. PayPal Shopping Cart), and would like to be paid in a currency other than U.S. Dollars, you will need to set up your buttons for your currency of choice. For additional information, please refer to the PayPal website or the manual for your PayPal Website Payments Solution.

`payment_gross` and `payment_fee`

These variables reflect the amount received and corresponding fee of U.S. Dollar (USD) payments. If the amount received and fee deducted are in a currency other than USD, the variables will still appear in your IPN, but will have no values in them.

Note: `payment_fee` is not always present in IPNs, such as when a payment is pending.

These values are absent for non-USD payments so that IPN scripts will not process these amounts as USD. This will intentionally break IPN scripts that do not handle Multiple Currencies payments if they receive a non-USD payment. However, legacy IPN scripts will continue to work as before as long as the merchant only receives USD payments.

Multi-currency IPN Variables

IPNs that use the `payment_gross` variable will have the following multi-currency variables added. The variables `mc_gross` and `mc_fee` will not be added to IPNs with `txn_type: subscr_signup, subscr_cancel, subscr_modify, subscr_failed, or subscr_eot`.

- **`mc_gross`:** Full amount of payment received, before transaction fee.

Note: If payment is in USD, the `payment_gross` value will equal `mc_gross`.

- **`mc_fee`:** Transaction fee associated with the payment. Variable should function like "payment_fee" variable (variable does not appear when payment pending, and so on).

Note: If payment is in USD, the `payment_fee` value will equal `mc_fee`.

- **mc_currency:** Currency of `mc_gross`, `mc_fee`, `payment_gross`, and `payment_fee` amounts. The values are (note the capitalization):
 - USD
 - EUR
 - GBP
 - CAD
 - JPY

For non-payment subscription IPNs, such as `signup`, `cancel`, `modify`, `failed`, and `eot`, `mc_currency` will refer to the currency of the subscription, rather than the currency of the payment.

For payment subscription IPNs, `mc_currency` will refer to the currency of the payment. Examples 1 & 2 below refer to `subscr_payment` IPNs.

Example 1: If a user with a USD balance receives a \$100 USD payment, the following variables will be used for the payment:

- `mc_gross = payment_gross`
- `mc_fee = payment_fee`

Example 1: USD Payment (subscr_payment IPN)

```
payment_status = Completed
payment_gross = 100
payment_fee = 3.00
mc_gross = 100
mc_fee = 3.00
mc_currency = USD
```

Example 2: If a user with a CAD balance receives a \$100 CAD payment, the following variables will be used for the payment:

- `mc_gross` and `mc_fee` have values
- `payment_gross` and `payment_fee` are blank

Example 2: CAD Payment (subscr_payment IPN)

```
payment_status = Completed
payment_gross =
payment_fee =
mc_gross =100
mc_fee = 3.00
mc_currency = CAD
```

Additional Variables

IPNs for payments that are either manually or automatically converted into the primary currency of the account will include the following three new variables with information on the conversion:

- **settle_amount:** Amount that is deposited into the user's primary balance after the conversion occurs.
- **settle_currency:** Currency of `settle_amount`.
- **exchange_rate:** Exchange rate used if a conversion transaction occurs.
- **pending_reason:** In addition, payments that are "pending" because the balance needs to be manually accepted, either because the account does not currently have a balance in that currency or because automatic conversion is not turned on, will have a new IPN `pending_reason`: `pending_reason = multi_currency`.

Example 3: If the account is set to automatically convert payments, these variables will be used to show the conversion. This example is for a user with a USD balance who receives a payment of 100 GBP:

Example 3: Automatic Conversion of GBP Payment

```
payment_status = Completed
payment_gross =
payment_fee =
mc_gross = 100
mc_fee = 3.00
mc_currency = GBP
settle_amount = 145.5
settle_currency = USD
exchange_rate = 1.5
```

Example 4: If a payment received is pending due to `pending_reason = multi_currency`, the first IPN received would not have the `settle_amount`, `settle_currency`, or `exchange_rate`.

Example 4: Pending Payment

```
payment_status = Pending
pending_reason = multi_currency
payment_gross =
mc_gross = 100
mc_currency = GBP
```

The second IPN would contain information about settling the payment. If the payment is accepted into the account's primary currency, which is USD in the following example:

Example 5: Pending - Convert to Primary Currency

```
payment_status = Completed
payment_gross =
payment_fee =
mc_gross = 100
mc_fee = 3.00
mc_currency = GBP
settle_amount = 145.5
settle_currency = USD
exchange_rate = 1.5
```

If the payment is accepted into a balance of the same currency:

Example 6: Pending - Accept to Currency Balance

```
payment_status = Completed
payment_gross =
payment_fee =
mc_gross = 100
mc_fee = 3.00
mc_currency = GBP
```

If the payment is denied:

Example 7: Pending - Deny

payment_status = Denied

payment_gross =

mc_gross = 100

mc_currency = GBP

Note: If a user receives a payment into a currency balance and later converts this amount into another currency balance, the corresponding currency conversion transaction has no IPN.

Where to Get Help with IPN

PayPal Help

If you need further assistance, go to <http://www.paypal.com/wf/>, click the **Seller Tools** topic, and then click **Instant Payment Notification (IPN)**.

PayPal Developer Discussion Boards

You can also check the PayPal Developer Discussion Boards at <http://www.paypaldev.org> for help