Sandbox User Guide

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PayPal Sandbox User Guide

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Overview of the PayPal Sandbox

The PayPal Sandbox is a self-contained environment within which you can prototype and test your PayPal applications. Before moving any PayPal-based application into production, you should test the application in the Sandbox to ensure that it functions as you intend and within the guidelines and standards set forth by the PayPal Developer Network (PDN).

The Sandbox is for use by developers of business solutions.

Business solutions integrated with PayPal might involve the features of PayPal available through PayPal's main web site, https://www.paypal.com, or the business solutions might involve use of the PayPal Web Services API.

Complementary Books

The *PayPal Sandbox User's Guide* and the *PayPal API Reference* are complementary books.

- The *PayPal Sandbox User Guide* is for businesses who need to develop and test their PayPal applications. It describes how to access PayPal's virtual testing environment (called "the Sandbox"), the different types of business roles involved in effective use of the Sandbox, how to set up different types of accounts, Sandbox email for verifying PayPal transactions, and seeing the PayPal-generated email sent to different business roles depending on the type of transaction you are testing.
- The *PayPal API Reference* is for programmers familiar with Web Services. It includes technical details about the PayPal Web Services API and its architecture, API classes and objects, input variables with allowable values, return values, and error codes and messages.

At-a-Glance Differences between the Sandbox and Live PayPal

The following table compares the Sandbox and Live PayPal. This is an at-a-glance view of the differences from the perspective of an in-house or third-party developer for a business.

You can also use this table as a checklist.

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	PayPal Developer Central and Sandbox	Live PayPal Website and API
Type of PayPal Account	Depending on the feature you want to develop and test, you need a Personal, Business, or Premier account.	Personal, Business, or Premier account
Developer Central: URL and site logo in upper left corner	https://developer.paypal.com	
Site logos in upper left corner	https://www.sandbox.paypal.com	https://www.paypal.com
API Server	https://api.sandbox.paypal.com/2.0/	https://api.paypal.com/2.0/
Business Roles	You fill all roles you need to test: merchant, buyer, and seller.	Real-world people fill these roles.
Company and people's names and postal addresses	Completely fictitious. Before you begin working with the Sandbox, create the details for all the business roles you must fulfill. The Sandbox simulates verification of postal addresses and names.	Real companies' and people's names and postal addresses.
Email addresses and email inboxes	The Sandbox has a special-purpose email inbox for your testing, contained in the Sandbox itself.	Real email address and inbox for each business role
Bank account and credit card numbers	The Sandbox creates all fictitious bank accounts, credit card numbers, and CVV2 numbers you need in order to develop and test. The Sandbox simulates the verification of these numbers.	Actual verification of bank account numbers, credit card numbers, and CVV2 numbers

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	PayPal Developer Central and Sandbox	Live PayPal Website and API
PayPal transactions	Your use of the Sandbox or PayPal API creates the transactions you need to test against. You control the status of these transactions. You have the choice to process all transactions yourself, either using the API or by logging in as the appropriate business role to process the transaction.	Live transactions, cleared by live PayPal processes
Fraud detection	Fraud Detection is not enabled for the Sandbox.	Full protection through PayPal's Fraud Detection
Digital certificates	After you request digital certificates for use with the API, the Sandbox automatically generates them. They are available for immediate downloading.	To safeguard your and your customers' security, requests for digital certificates for use with the Live PayPal API must be verified by PayPal before they are issued.
PayPal Merchant Features supported	All features of the live PayPal website, except closing an account, auction features, BillPay, Anything Points, monthly statements, shipping preferences, PayPal Shops, and Seller Protection Policy	
Technical Support	Developer Technical Support is available from Developer Central. No telephone support. See "Technical Support" chapter.	Customer Service is available either by email or by telephone. See "Technical Support" chapter.

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Accessing the PayPal Sandbox

To access the PayPal Sandbox, sign up for a Developer Central account. After becoming a member of PayPal Developer Central, you access the Sandbox either directly or by launching it after you log in to Developer Central.

Depending on the PayPal feature you want to test with an application, you need to set up different types of PayPal accounts: PayPal Personal, Business, or Premier account. See the "Planning the Types of Test Accounts You Need" section.

Signing Up for Developer Central

You do not need an existing, live PayPal account in order to sign up for Developer Central.

1. Go to https://developer.paypal.com
2. Click **Sign Up Now**.
3. Follow the on-screen instructions.

After you sign up, PayPal emails instructions for logging in to you at the email address you used to sign-up. If you have mail filtering enabled in your mail software, the email sent by PayPal might be filtered out or stored in a folder where you are not expecting it to be. For instance, with Microsoft Outlook mail software, your filtering might cause the email to be stored in "Junk" or "Spam."

Getting to the Sandbox

You have two ways to get to the PayPal Sandbox: direct access or logging in to Developer Central and then launching the Sandbox.

Regardless of whether you get to the Sandbox directly or by launching it, login to the Sandbox as a test user of the necessary type to test the feature you want to test: Personal, Business, or Premier account.

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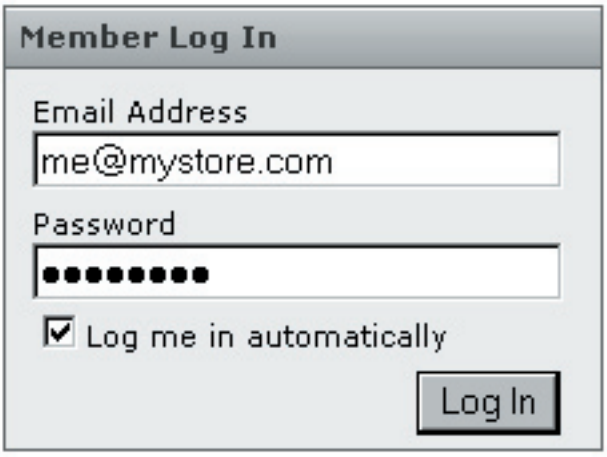
Accessing the Sandbox Directly

When you log in to Developer Central, you have the option to get to the Sandbox directly at https://www.sandbox.paypal.com/. At the Developer Central login page, click **Log me in automatically**:



To access the Sandbox directly, you must enable cookies in your browser.

Launching the Sandbox

To launch the Sandbox:

1. Log in to Developer Central.
2. Click the **Sandbox** tab.
2. Select the test user that represents the feature you want to test.
3. Click **Launch Sandbox.**

Managing Your Developer Central Profile

Except for your registered email address, you can change all the information associated with your Developer Central account, including your password. (Your email address is your login username.)

To manage your Developer Central profile:

1. Log in to Developer Central.
2. Click **profile** in the upper left of the main Developer Central page.
2. Change any of details, except your email address.
3. Click **Save** or **Cancel**.

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Sandbox Email

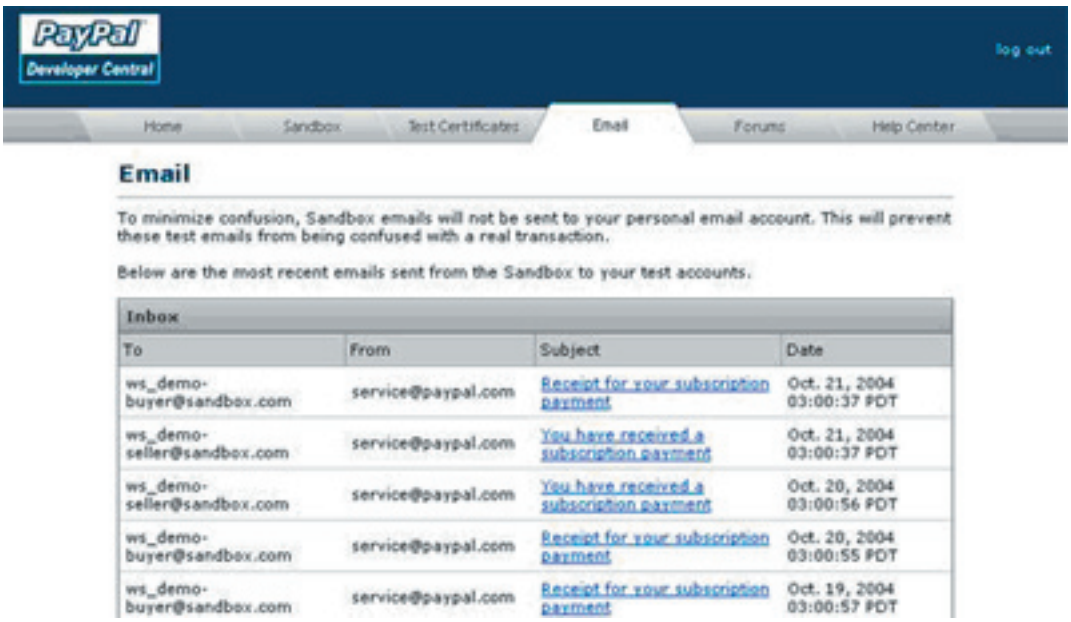
When certain kinds of transactions occur in the live PayPal system, PayPal sends email messages to participants in the transaction. From these email messages, the recipient or initiator of an event or transaction can verify that the event took place and that the monetary amounts associated with the event are correct. With the live PayPal system, email messages are sent to the real email addresses of the participants.

PayPal Sandbox email, however, is a self-contained email system in the Sandbox itself. Each developer registered with PayPal Developer Central has a single inbox to which all email messages for test users are sent. You see email messages addressed only to test users associated with your Developer Central account: the Sandbox test accounts you set up.

To access your email inbox in the Sandbox:

1. Log in to Developer Central.
2. Click the **Email** tab.

Up to 30 of the latest email messages are listed in your inbox. The subject line of email messages you have not read are in bold. Click a subject line to read the message.



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Setting up Test Users

Depending on the business application you are developing and testing, you need different types of test accounts. There are two types of test accounts: Personal and Business.

Planning the Types of Test Accounts You Need

Determine the types of test accounts you need to test the applications you are developing. In addition, determine the number of different accounts you need. You might need several different Personal or Business PayPal test accounts to test your application.

The information you need to supply when you create test accounts is as follows. The email address and password of a test account should never be those a real account on the live PayPal site. The same applies to your answers to the security questions. All of this data should be fictional.

- Mailing address
- Email address and password for the test PayPal account. You can use the same password (not email address) for all your test accounts so that you can more easily remember it.
- Security questions and answers. You can use the same security questions and answers for all your test accounts so that you can more easily remember them.
- Personal or Business account
- User agreement

For Business accounts, you also need to supply the following fictitious information for testing:

- Business name and address
- Customer service contact information
- Business owner contact information
- Business owner address

Managing Test Accounts

In Developer Central, you can view, work with, or launch the Sandbox for all your test accounts, You can also create new accounts or remove test email addresses from your view.

To work with test accounts, log in to Developer Central, and click the **Sandbox** tab.

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To create a new account, click the **Create Account** link in the upper left corner of the list of accounts.

To work with the account, select the account by clicking the radio button associated with it on the left.

You can start the Sandbox for the selected account by clicking **Launch Sandbox**. When you logged in to Developer Central, you might have set the **Log me in automatically** checkbox to allow direct access to https://www.sandbox.paypal.com/, in which case you do not have to launch the Sandbox to access it.

Note about Deleting Test Accounts: The **Delete** button does not delete the test account. It removes the test account from your list of accounts, but the email address for the test account is still on file for the Sandbox. You cannot reuse an email address that is still on file for the Sandbox.

Creating a Personal Account

To create a test user with a Personal account:

1. Log in to Developer Central.
2. Click the **Sandbox** tab.
3. Click the **Create Account** link.
4. On the next page, select the **Personal Account** radio button. Then click **Continue**.
5. Next, enter the account information for the new test user's PayPal Sandbox account. The email address entered on this page serves as the PayPal ID for that test user. Use a fictitious email address for each new test user, so that the PayPal ID is unique. Remember that passwords are case-sensitive.
6. Click the **Sign Up** button.
7. On the next page (confirming email address), click the **Continue** button. This goes to the **My Account > Overview** tab.

To confirm the email address for the new test user, see the steps in the "Confirming an Email Address" section.

Creating a Business Account

To create a test user with a Business account:

1. Log in to Developer Central.
2. Click the **Sandbox** tab.

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3. Click the **Create Account** link.
4. On the next page, select the **Business Account** radio button. Then click the **Continue** button.
5. Next, enter account information for the business represented by the new PayPal account.
6. Click **Continue** when done.
7. Next, enter the user information for the new test user's PayPal Sandbox account. Click the **Sign Up** button when done.
8. Next, click **Continue**. This takes you to the **My Account > Overview** tab.

Confirming an Email Address

To confirm an email address for a test user:

1. Log in to Developer Central.
2. Click the **Email** tab.
3. On the next page, click the email link to open the email window.
4. In the window that appears, find the email for the new test user with "Activate Your PayPal Account!"
5. Open the email and click the confirmation link.

"Unverified" Account Status

At this point your new test users exist and have confirmed email addresses. However, they have an "Unverified" status. To set a user to a status of "Verified", add a bank account for it. For more information, see the "Adding a Bank Account" section.

Adding a Bank Account

The next step in creating new test user and changing the status from "Unverified" to "Verified" is adding a bank account for the test user. The bank account is a source of funds for the test user's PayPal account, and thus for transactions between that test user and other test users. A test user can have multiple bank accounts, but at least one is required in order to verify the test user.

The Sandbox automatically generates bank account and sort code numbers when you add a bank account.

For German or UK Developers: Use the automatically generated bank account information only for test US bank accounts. To add a test UK or German bank account, follow these guidelines:

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	Bank Account Number	Sort Code
Germany	Any 10-digit number	Any 8-digit number
UK	Any 8-digit number	Any 6-digit number

To add a bank account for a new test user:

1. After logging into Developer Central, launch the Sandbox as the test user.
2. Navigate to **My Account > Overview**.
3. In the **Overview** window, click the **Add Bank Account** link in the **Activate Account** box on the left.
4. In the **Add Bank Account** window:
   a. Enter a fictitious bank name. If you copy-and-paste the automatically generated bank account number as the name of the bank, that account number will be more visible to you for use in later testing.
   b. Except for UK or German test bank accounts, leave all other automatically generated information as is.

      Make a note of the test bank account number, because it will be handy to have when you do your testing.
   c. Click **Add Bank Account**.
5. In the resulting success, click **Continue** at the bottom.

   The **My Account > Overview** page opens.
6. Click the **Confirm Bank Account** link in the **Activate Account** box at the left side.
7. In the **Confirm Bank Account** window, click **Submit**.

To create additional bank accounts for an existing test user:

1. After logging into Developer Central, launch the Sandbox as the test user.
2. Navigate to **My Account > Profile**.
3. Under the **Financial Information** header, click the **Bank Accounts** link.
4. In the **Bank Account** window, click **Add**.
5. In the **Add Bank Account** window:
   a. Enter a fictitious bank name. Using the automatically generated bank account number as the name of the bank will make that account number visible to you for use in testing later.

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b. Except for UK or German test bank accounts, leave all other automatically generated information as is.

   Make a note of the test bank account number, because it will be handy to have when you do your testing.

c. Click **Add Bank Account**.

6. In the resulting success window, click the **Continue** button at the bottom.

   The **My Account > Overview** page opens.

7. Click the **Confirm Bank Account** link in the **Activate Account** box at the left side.

8. In the **Confirm Bank Account** window, click **Submit**.

Adding a Credit Card Account

The final step in creating a new test user is adding a credit card account for the test user. The credit card account is a source of funds for the test user's PayPal account, and thus can be used for transactions between that test user and other test users. A test user can have multiple credit card accounts.

Test credit card numbers cannot be used to pay for real-world transactions.

Adding a Credit Card for a New Test User

To add a credit card account for a new test user:

1. After logging into Developer Central, launch the Sandbox as the test user.
2. Navigate to **My Account > Overview**.
3. In the **Overview** window, click the **Add Credit Card** link in the **Activate Account** box on the left.
4. In the **Add Credit Card** window, leave all information as it is (automatically generated) and click **Add Credit Card**.

Adding More Credit Cards for an Existing Test User

To create additional credit card accounts for an already existing test user:

1. Log in to the Sandbox as the test user.
2. Navigate to **My Account > Profile**.
3. Under the **Financial Information** header, click the **Credit Cards** link.

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4. In the **Credit Cards** window, click the **Add** button.
5. In the **Add Credit Card** window, leave the automatically generated information as is.
6. Make a note of the credit card number for your use in later testing.
7. Click **Add Credit Card**.

Generating a Credit Card Number to Test PayPal Account Optional

To obtain a test credit card number for testing PayPal Account optional:

1. Log in to the Sandbox as the test user.
2. Navigate to **My Account > Profile**.
3. Under the **Financial Information** header, click the **Credit Cards** link.
4. Make a note of the credit card number for your use in later testing.

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Testing PayPal Website Features

You can use the PayPal Sandbox to test your website features that do not rely on the PayPal Web Services API. The website features you can learn, develop, or test in the Sandbox are as follows:

- **Website Payments with Buy Now Buttons:** Use the Sandbox to test accepting PayPal as a payment mechanism on a website. For more information, refer to https://www.paypal.com/pdn-item.
- **Instant Payment Notification (IPN)**
- **Shopping Cart Purchases:** Use the Sandbox to test the purchase of multiple items in a single transaction using a single payment. For more information, please refer to https://www.paypal.com/shoppingcart.
- **Subscriptions:** Use the Sandbox to test recurring payments. For more information, please refer to https://www.paypal.com/pdn-recurring.
- **Refunds:** Use the Sandbox to test refunding payments from a test buyer.

Website Payments with Buy Now Button

You can use the Sandbox to familiarize yourself with the PayPal Buy Now button, with which you can associate PayPal with a specific item you sell on you website.

To create a test Buy Now Button:

1. After logging into Developer Central, launch the Sandbox as the test **seller** account.
2. Go to the **Merchant Tools** tab.
3. Select the **Buy Now Buttons** link under the **Website Payments** heading to get to the Button Factory.
4. Follow the online instructions to create a Buy Now button. For more information, see the *PayPal Integration Guide*.
5. Copy and paste the code into your webpage file wherever you would like the button image to appear. Typically, the button should be located next to the description of the item or service. Your webpage does not have to be published to your web server for you to check the button placement; it can be on you own local hard drive.

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Instant Payment Notification (IPN)

You can use the Sandbox to test Instant Payment Notification, such as the PayPal Buy Now button or reversals.

Setting up IPN in the Sandbox

For information about implementing IPN on the PayPal site, refer to the following:

- Technical overview at http://www.paypal.com/cgi-bin/webscr?cmd=p/xcl/rec/ipn-techview-outside
- *PayPal Integration Guide* at https://www.paypal.com/en_US/pdf/integration_guide.pdf

test_ipn Variable: The Sandbox sets the variable `test_ipn` with a value of 1 in the HTTP response back to your IPN page. The purpose of this variable is to clearly differentiate between live and Sandbox IPN, so you can write your processing programs to work with either live or Sandbox IPN. If the test_ipn variable is not present in the HTTP response, you are working with Live PayPal.

To enable IPN for a test user:

1. Log in to Developer Central, click the **Sandbox** tab, select the desired test user, and click **Launch Sandbox**.
2. Click the **Profile** subtab.
3. Click 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.**
7. Install the IPN code on your Web server. You might want to 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

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Testing Payments with Buy Now Button

For the purposes of testing the Buy Now button, your webpage does not need to be published to your web server. It can reside on your local hard drive. However, you do need to be logged in to the Sandbox.

1. Log in to Developer Central, click the **Sandbox** tab, select the desired test user, and click **Launch Sandbox**.
2. Open the HTML file containing your Buy Now Button.
3. Click the Buy Now Button.
4. Log in using your test **buyer** account.
5. Follow the on-screen instructions to complete your test payment.

Verifying a Test Payment

1. Log in to Developer Central.
2. Click the **Email** tab.

   Your Sandbox inbox shows payment confirmation email messages for the seller and buyer.
3. To further verify that the payment was successful:
   - Check your web server for IPN notifications related to the payment.
   - Launch the Sandbox as your test buyer or seller account and navigate to **My Account > Overview** to see the transaction in your **Recent Activity**.

Verifying a Test Refund

To verify a test refund, you must have already made a test payment.

1. Log in to Developer Central.
2. Click the **Email** tab.

   Your Sandbox inbox shows refund confirmation email messages for the seller and buyer.
3. To further verify that the refund was successful:
   - Check your Web server for IPN notifications related to the refund.
   - Launch the Sandbox as your test buyer or seller account and navigate to **My Account > Overview** to see the refund in your **Recent Activity**.

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Transferring Funds to a Test Account

Before a test user can exchange funds with other test users in transactions, you must manually transfer them to the test user's account.

To transfer funds to a test user's PayPal account:

1. After logging into Developer Central, launch the Sandbox as the test user.
2. Navigate to **My Account > Add Funds**.
3. Click the **Transfer funds from a Bank Account** link.
4. On the **Add Funds by Electronic Funds Transfer** page:
    a. Select the bank account from which the funds are coming in the **From** drop-down list.
    b. Enter the amount to transfer in the **Amount** box.
    c. Click **Continue**.
5. On the resulting **Add Funds Confirmation** page, click **Submit**.
6. Navigate to **My Account > Overview,** and the transfer transaction should be listed.

Clearing or Failing Test eCheck Transactions

When you use eCheck to transfer funds or send payments, the transaction appears as pending until you manually clear or fail it. Manual clearing is only necessary in the Sandbox.

To clear or fail test eCheck transactions:

1. In the transactions log, click the **Details** link (in the **Details** column).
2. In the **Transaction Detail** window, there are two links to simulate actual bank clearing. These links appear only in the Sandbox:
    - **Clear Transaction:** Click to complete the transaction.
    - **Fail Transaction**: Click to cancel the transaction.
3. Click **Return to Log** to see the transfer completed and the money in the Sandbox account.

    The **My Account > Overview** page opens.
4. Click the **View Limits** links on the **My Account > Overview** page to see the spending limits for the current test user.

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Sending Funds to a Seller

To purchase goods or services, a PayPal user must send funds to a seller. In the PayPal Sandbox, you can simulate the actions of a buyer by manually initiating the payment of funds. You must use a Personal account that represents a paying customer.

To send funds from one test user to another:

1. Log in to Developer Central, click the **Sandbox** tab, select the desired test user, and click **Launch Sandbox**.
2. Navigate to the **Send Money** tab.
3. On the Send Money page:
    a. Enter the email address (PayPal account name) for the test user in **Recipient's Email** box.
    b. Enter the amount to send to the seller test user in the **Amount** box.
    c. Select the currency for the funds in the **Currency** drop-down list. **Note: Auction** is not an option in the drop-down list.
    d. Select the reason for sending the funds in the **Type** drop-down list.
    e. Enter text in the **Subject** box, if you want to. This text is the subject of the email sent to the recipient about the transfer of funds.
    f. Enter text in the **Note** memo box. This text appears in the body of the notification email.
    g. Click **Continue**. This does not send the money; a confirmation step follows.
4. On the **Check Payment Details** page:
    a. Review the transaction details for correctness. You can click **More Funding Options** to change the source of fund used for payment.
    b. Click **Send Money**. This triggers the actual transfer of funds.

Your Sandbox email inbox contains all the email messages that are sent to the test user sending the money and the test user receiving the money. See the "Sandbox Email" section.

Log in as the seller test user and navigate to the **My Account > Overview** tab to see the transaction for the recipient's account.

Billing A Customer

PayPal Business users can bill another PayPal user for the purchase of goods or services. In PayPal terminology, the feature to bill a customer is called **Request Money**. In the PayPal Sandbox, you can manually initiate a request for funds

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from another test user. One test account is the biller. The other test account is the customer.

To request funds from another test user:

1. After logging into Developer Central, launch the Sandbox as the test user requesting the funds.
2. Navigate to the **Request Money** tab.
3. On the **Request Money** page:
    a. Enter the email address (PayPal login name) for the test user being billed in the **Recipient's Email** box.
    b. Enter the billed amount in the **Amount** box.
    c. Select the currency for the funds in the **Currency** drop-down list.
    d. Select the reason for the request for funds (billing) in the **Type** drop-down list. Note: **Auction** is not an option in the drop-down list.
    e. Enter text in the **Subject** box. This text is the subject of the email sent to the recipient regarding the sent funds. For more information, please refer to the *Accessing Email to and from Test Users* section of this document.
    f. Enter text in the **Note** memo box. This text appears in the body of the notification email.
    g. Click **Continue**.
4. On the **Request Money – Confirm** page, click **Request Money**. This triggers the actual request for funds.
5. Navigate to the **My Account > Overview** tab. The request for money should be listed.
6. Log in as the billed test user and navigate to the **My Account > Overview** tab to see the transaction for the billed user's account. The transaction for the request for money appears on the **My Account > Overview** tab with **Pay** and **Cancel** buttons. Click **Pay,** and in the confirmation window, click **Send Money**. This completes the transfer of requested funds.

To view the email messages sent to both test users, go to your Sandbox email. For details about your Sandbox email, see the "Sandbox Email" section.

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Testing PayPal Web Services API Applications

This chapter describes using the Sandbox for testing your PayPal Web Services API applications:

- Requesting and installing a PayPal-issued digital certificate and private key for use with the Sandbox
- Using the PayPal-provided APIClient tools for testing with the Sandbox
- Testing a refund with the RefundTransaction API class and the APIClient

This chapter does not contain step-by-step procedures for every aspect of your own software environment for using the Sandbox or the live PayPal Web Services API. For some steps, it assumes that your software development environment is one of the two supported by PayPal.

SOAP Implementation	Programming Language or Development Environment	Operating System
Microsoft .NET Framework 1.1	C# (Microsoft Visual Studio 2003)	Microsoft Windows 2000 or Windows XP Professional
Apache Axis 1.1 Final	Java 1.3 or 1.4	UNIX, Linux, Microsoft Windows 2000, or Microsoft Windows XP Professional

For more information, see the following sites.

Microsoft .NET Framework Version 1.1

http://www.microsoft.com/downloads/details.aspx?FamilyID=262d25e3-f589-4842-8157-034d1e7cf3a3&DisplayLang=en

Apache Axis 1.1 Final

http://ws.apache.org/axis/

Web Location of PayPal Schema Definition

The PayPal Web Services schema and eBL base and core components are required for developing applications with the PayPal API. The following are the locations of the WSDL and X-Schema files defining the PayPal API. You can use these locations either for development and test of your applications or for running your applications in production.

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For the PayPal Sandbox	
PayPal Schema	http://www.sandbox.paypal.com/wsdl/PayPalSvc.wsdl
eBL Base Components and Component Types	http://www.sandbox.paypal.com/wsdl/eBLBaseComponents.xsd http://www.sandbox.paypal.com/wsdl/CoreComponentTypes.xsd
For Live PayPal	
PayPal Schema	http://www.paypal.com/wsdl/PayPalSvc.wsdl
eBL Base Components and Component Types	http://www.paypal.com/wsdl/eBLBaseComponents.xsd http://www.paypal.com/wsdl/CoreComponentTypes.xsd

Digital Certificate and Private Key

To ensure security for your customers and your business, a digital certificate and private key issued by PayPal are required for use of the PayPal Web Services API and the Sandbox.

To request a PayPal API certificate, you must first create a Business or Premier account.

For use in production with the Live PayPal API service, PayPal Developer Technical Support must verify the authenticity of the credentials of a certificate request before issuing the certificate.

Requesting and Downloading a Certificate

PayPal automatically issues digital certificates for use with the Sandbox.

1. With your PayPal Business or Premier account email address, log in to Developer Central.
2. Launch the Sandbox.
2. Navigate to **My Account > Profile.**
3. Click the **API Access** link.
4. Click the **API Certificate Request** link.
5. Follow the on-screen instructions to complete your certificate request.

To download your PayPal API test certificate:

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1. Log in to Developer Central.
2. Click the **Test Certificates** tab.
3. Click **Download** at the lower right.
4. Save the file to your local disk.
5. Rename the file extension of the API certificate file from `.txt` to `.pem`.

Converting a Certificate/Private Key File to .P12 Format

The API certificate file contains both your private key and your test certificate.

You must split the `.pem` file into two separate files and convert the private keyfile to the PKCS12 (private key) format. You can do these tasks either manually or with software of your choice.

The example in this section relies on public-domain software called OpenSSL at http://www.openssl.org/. The `openssl` command works on both UNIX and Microsoft Windows. A pre-compiled copy of the `openssl` command for Microsoft Windows is available at http://www.openssl.org/related/binaries.html.

Using openssl: Use the following `openssl` command to split the PayPal-issued certificate file and convert the private key file. Assume that you have saved the PayPal-issued certificate to a file named `my.pem`:

```
openssl pkcs12 -export -inkey my.pem -in my.pem  -out my.p12
```

When you convert the test certificate, you are asked to enter a password to be associated with the .P12 file. The password can be anything you want to use.

Here is an example of running `openssl` on Microsoft Windows:

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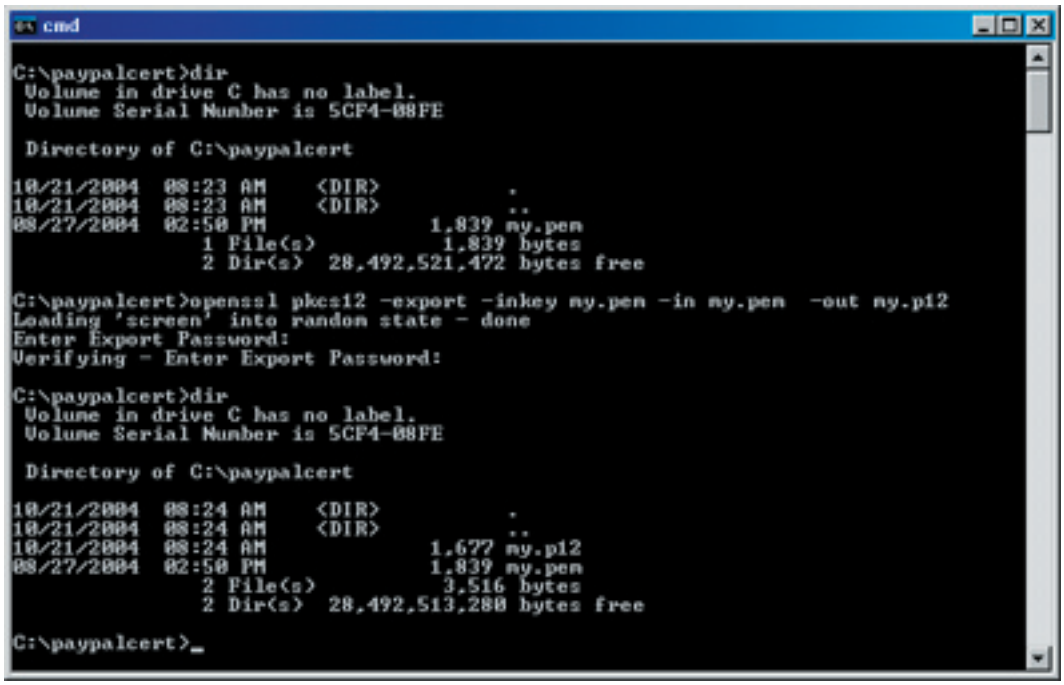

Using other certificate conversion software: Although details about cryptographic software are beyond the scope of this guide, you can use any software other than OpenSSL that you prefer. Make sure it can produce a PKCS12 private keyfile.

See the following sites for information about some cryptographic software that might be helpful for your own PayPal applications.

- .NET: System.Security.Cryptography
http://msdn.microsoft.com/library/default.asp?url=/library/en-us/cpguide/html/cpconcryptographicservices.asp

- **Java:** J2SE and IAIK-JCE
http://java.sun.com/j2se/1.4/
http://jce.iaik.tugraz.at/products/01_jce/

Internet Explorer: Importing Your .P12 Keyfile, Exporting a .CER

If you use Microsoft .NET Framework 1.1 and Internet Explorer, you must import the PKCS12 private key into your browser and export it as a DER X.509 format file, which has a .CER file name extension.

1. Double-click the previously created .P12 file. The Certificate Import Wizard appears.
2. On the **Welcome to the Certificate Import Wizard** screen, click **Next**.
3. On the **File to Import** screen, keep the default setting and click **Next**.

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4. On the **Password** screen, type the password you specified when you applied for the certificate, and click **Next**.
5. On the **Certificate Store** screen, keep the default setting and click **Next**.
6. On the **Completing the Certificate Import Wizard** screen, click **Finish**.
7. When the confirmation dialog box appears, click **OK**.
8. In Internet Explorer, open the **Tools** menu and click **Internet Options...**
9. On the **Content** tab, click **Certificates**. Verify that your PKCS12 private key certificate was successfully imported.
10. Select the PKCS12 certificate, and click **Export**. The Certificate Export Wizard appears.
11. On the **Welcome to the Certificate Export Wizard** screen, click **Next**.
12. On the **Export Private Key** screen, click **Next**.
13. On the **Export File Format** screen, keep the default selection—DER encoded binary x.509 (.CER)—and click **Next**.
14. On the **File to Export** screen, enter a name for the file.

    If you want to choose a location to store the file, click **Browse**. You do not have to specify the .cer file name extension.

    Click **Next**.
15. On the **Completing the Certificate Export Wizard** screen, click **Finish**.
16. When the confirmation dialog box appears, click **OK**.
17. Close all remaining windows.

Where to Store your Private Keyfiles

The converted .P12 private keyfile or .CER certificate file do not need to be stored in any specific location as long as you and your applications know where that location is: the exact absolute path to the keyfile. As with any digital certificate, you should exercise proper caution and follow common security practices to keep the certificate and keyfile safe.

PayPal SOAP APIClient Tools

PayPal provides a SOAP API client tool for use with both Microsoft .NET 1.1 or with Java. The API clients can be used with either the PayPal Sandbox or with the live PayPal API server.

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Download the API client package from the **Help Center** section of PayPal Developer Central (https://developer.paypal.com):

API Client Tools for...	Zipfile Name	Notes
Microsoft .NET Framework 1.1	apiclient-CS.zip	
Java 1.3 or 1.4 and Apache Axis 1.1 Final	apiclient-J.zip	Contains a gzipped tar file that you must expand after you unzip apiclient-J.zip.

PayPal does not pre-compile the API client tools because your exact use of the tools depends on your own development and testing needs. Build instructions for both Microsoft .NET and for Java come with each zipfile.

Each tool also comes with sample source code you can examine to get an idea of how to use the PayPal Web Services API; for example, a generic wrapper class and classes to set API objects.

Using APIClient with the Sandbox

You can use PayPal APIClient with the Sandbox for testing. The APIClient command-line has an option to specify the URL of the server. For example, to test with the RefundTransaction API class against the Sandbox, you can specify the following command-line:

```
RefundTransaction –h https://api.sandbox.paypal.com/2.0/ -t transactionID
```

You can also set the name of the Sandbox in the APIClient's APIClient.cfg configuration file:

```
URL=https://api.sandbox.paypal.com/2.0/
```

See the next section for details about the APIClient options and configuration file.

Formal Syntax of APIClient

This section details the formal syntax and usage of the APIClient. The APIClient is the same for both Microsoft Windows and Java.

Usage

[java] APIClient *APIclassname options* [-help]

The only difference between the two API clients is that you must run the APIClient for Java with the Java interpreter.

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API Class Names

The following API class names are valid values for the APIClient *APIclassname* argument.

```
AddressVerify

GetTransactionDetails

MassPay

RefundTransaction

TransactionSearch
```

Options for All API Classes

The following options apply to any of the PayPal API classes. Each option has a short and long form; the option argument must be used with either form.

For information about configuration file keywords, see the "Configuration File for APIClient" section.

Option and Parameter	Configuration File Keyword	Definition
-u or --UserName *username*	USERNAME	API user name
-p or --Password *password*	PASSWORD	API user password
-! or --Subject *authorizing_account*	SUBJECT	For a third-party developer, the PayPal account name that authorized the use of PayPal Web Services API. This is the PayPal email address of that authorizing account.
-h or --URL *urlhost*	URLHOST	URL of the PayPal Sandbox server: https://api.sandbox.paypal.com/2.0/
-x or --Proxy *proxy_server_url*	PROXY	URL of a proxy server by which to communicate with *urlhost*
-c or --CertFile *private_keyfile*	CERTFILE	Path to the private PKCS12 (.p12) or DER (.CER) keyfile
-w or --Wait		Wait for enter key before running APIClient
-o or --OutputFile *outputfilename*	OUTPUT	Path to file in which to save output from APIClient. Default is the console.
-k or --CertPassword *private_key_password*	CERTPASSWORD	Password for the private PKCS12 (.p12) or DER (.CER) keyfile

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Options for Individual API Classes

Each API class requires additional options and arguments. To display the help for a particular class, use the following command:

```
APIClient APIclassname -help
```

For example, to display the help for the RefundTransaction API class, enter the following:

```
APIClient RefundTransaction -help
```

Configuration File for the APIClient

You can store option arguments in the APIClient.cfg configuration file. The values for each configuration file keyword are the same as the arguments you use with the command-line options.

```
//   Sample APIClient.cfg
//Lines prefixed with "//" are comments. Remove the comment
//characters to activate a keyword.
//You can use the APIClient.cfg file to store commonly used command line
    arguments.
//To store values, use the long option name. For example:
//USERNAME=test@paypal.com
//CERTFILE=mycert.p12
//URL=https://api.paypal.com/2.0/
```

Any options and arguments you specify on the command line override the configuration file keywords and values.

Example: Refunding a Payment with the APIClient

This example assumes that you have already set up a test payment that needs to be refunded. If you have not, you can log in to the Sandbox with your test buyer account to send a payment to your test seller account.

Run the APIClient to Refund the Transaction

To refund the transaction with the APIClient, you must know the transactionID to refund. Depending on what values you have set with keywords in you APIClient.cfg file, you might have to specify other options and arguments on the APIClient command line:

```
java RefundTransaction –h https://api.sandbox.paypal.com/2.0/ -t
transactionID
```

The following is an example of a successful refund using the APIClient.

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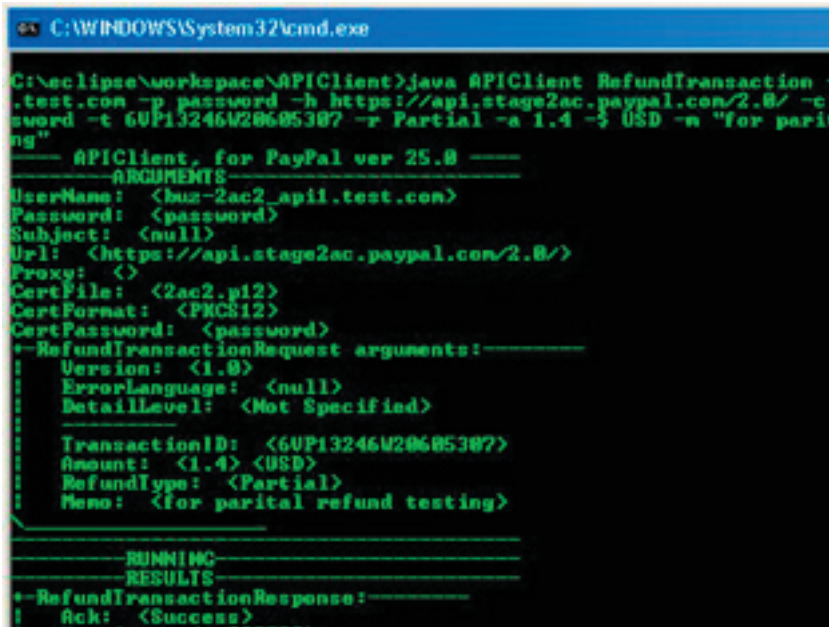
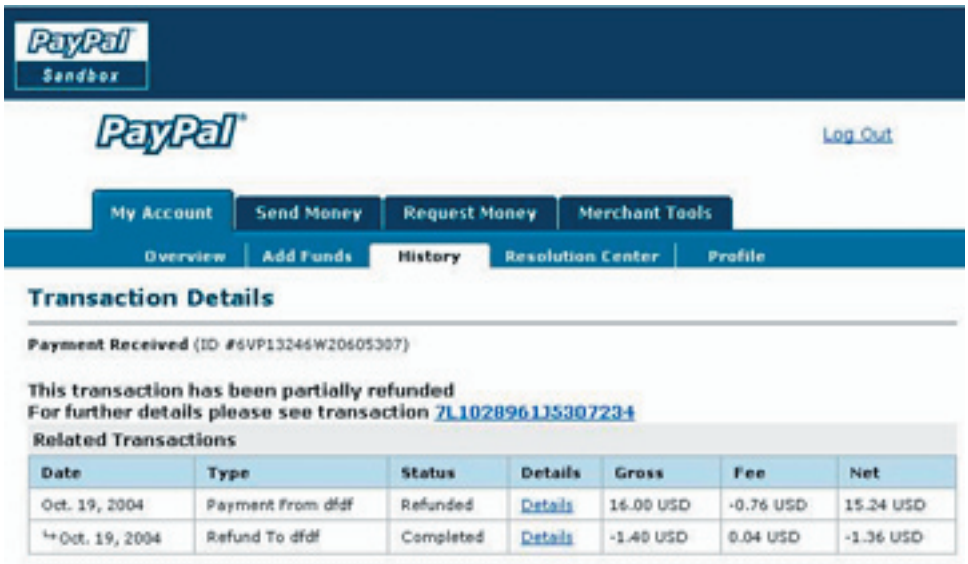


Confirm the Refund

To confirm the success of the refund:

1. Log in to the Sandbox with your seller test account.
2. In the **My Account** tab, next to the payment from the test buyer account, click **Details**.

A successful refund is indicated on the **Transaction Details** page similar to this:



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Technical Support

Depending on the PayPal product you need assistance with, contact either Customer Service or Developer Technical Support.

Contacting Customer Service for Live PayPal Website Help

Use PayPal Help to find an answer to any problem you might encounter with live products such as Website Payments or Instant Payment Notification.

To contact Customer Service about issues with the Live PayPal website:

1. Go to https://www.paypal.com/
2. Click **Help** in the upper left corner of the page.
3. Click **Contact Us** in the lower left of the page.
4. Chose one of the following options:

   Help by Email

   Help by Phone

Contacting Developer Technical Support for API Help

For information about PayPal Web Services API, Developer Central, and using the Sandbox, refer to the following resources:

- **Help Center:** In Developer Central, click **Help Center** to access developer manuals and links.
- **Forums:** In Developer Central, click **Forums** to share information with the PayPal developer community.

Use the **Forums** first to find answers about any questions or problems you might have. Another developer might have already posted information about your question or problem.

To contact Developer Technical Support about the PayPal Web Services API:

1. Log in to your account at https://developer.paypal.com/ by entering your email address and password in the Member Log In box
2. Click **Help Center** at the bottom of the box on the right side of the page.
3. Click **Email PayPal Support**.
4. Complete the form.

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