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<http://www.intrafoundation.com>

Version 1.5, December 15th 2004

"Making Atomic Warfare Fun Again" since 1997

Macromedia ColdFusion MX 6.1 Java
CFX.
Send related correspondence
to:
products@intrafoundation.com

What is this? CFX_PayPalAPI is an Java-

based Extension Tag for use with Macromedia ColdFusion MX that enables you to directly communicate with (consume) PayPal's new web-service based API.

Due to the way security was implimented with their web service, ColdFusion is, at this time, unable to establish an authorized HTTPS connection with their server. This software overcomes that issue as well as presenting their API in a friendly, query-based manner.

(See the [PayPal Developer](#) web site for more detailed information on exactly what services are available from the PayPalAPI. For the sake of clarify, this software attempts to impliment their API verbatim as it is stated in their PDF manuals. (Within the limitations that it is a constantly evolving and changing interface, which, it must be said, apparently has little in the way of review before being published.)

Currently the software supports the following CFML Engines:

- **Macromedia** ColdFusion MX to version 6.1

If you have any bug reports, suggestions for enhancements or for new features, feel free to email us at webmaster@intrafoundation.com.

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Official PayPal Documentation

The official documentation for the Web Service API that this software interfaces with can be found in a set of PDFs on the PayPal web site at the following locations. Please refer to these documents for detailed information on the remote function calls and fields referenced.

[Merchant User Manual and Integration Guide](#) (PDF)
[API Reference Manual](#) (PDF)

As there is little point in replicating said official data here, the documentation provided with this software shows only the specifics of how it itself interfaces with the web service and any specific differences that may have arisen with its implementation.

Please see the PayPal [PayPal Developers site](#) for detailed information and their official support forum.

Installation

Installation of this software consists of:

1. Copy the JAR file CFX_PayPalAPI.jar to C:\CFusionMX\cfx\java\ (this varies depending on how and where you installed you CFMX).
2. Using the CFIDE (ColdFusion Administration) go to the CFX tags section and add this tag.
3. Using the CFIDE (ColdFusion Administration) go to Java and JVM, then the CLASSPATH field and add C:\CFusionMX\lib\cfx.jar, c:\CFusionMX\cfx\java\CFX_PayPalAPI.jar, (this varies depending on how and where you installed you CFMX).

This software requires the use of Axis 1.1 which (unless you are using the software in command-line debug mode without ColdFusion MX) will come with ColdFusion and should automatically already be in the Java CLASSPATH.

Tag Name CFX_PayPalAPI

Class Name com.intrafoundation.CFX_PayPalAPI.CFX_PayPalAPI

Description CFX_PayPalAPI by Lewis Sellers of Intrafoundation Software - HTTP://www.intrafoundation.com

PKCS12 Certificates: FILE and REGISTRY

All communications with the PayPalAPI requires the transmission of a PKCS12 certificate and its accompanying password. The certificate can either be stored in a FILE or in the Windows REGISTRY.

There are four parameters that control the handling of the certificate: CertStorage, CertFormat, CertLocation and CertPassword.

CertStorage is either "FILE" or "REGISTRY".

CertFormat is at this time always "PKCS12".

CertPassword is the password used to authenticate the certificate.

Lastly CertLocation is the actual location that the certificate can be found. If CertStorage is "FILE" this is a file location such as "c:\mycerts\cert1.p12". If CertStorage is "REGISTRY" then this is a registry location in the HKEY_LOCAL_MACHINE hive and the location will look like for example like "SOFTWARE\Intrafoundation\cert1".

Updates and the changing PayPal API protocol

PayPal has a somewhat horrible reputation for customer and developer support. Unfortunately. For that reason, and the fact that the API is, unlike some, currently evolving and changing, occasional tweaks to this software may be required. Any such updates to fix minor problems or add completely new Web Service calls are free. Simply inform us of the problem you're having (preferably with some captured details -- scrubbed of sensitive information) and we will of course investigate the issue as soon as possible.

Examples

There are several simple CFML scripts included providing examples of how to use this software. You must, of course, install the software first. (See [installation](#)).

A few of the examples require you add (in the CFMX administration panel) the included sample Access database "CFX_PayPalAPI.mdb" as "CFX_PayPalAPI".

You must also have a valid PayPal or PayPal Sandbox account and the additional API username/password as well as a valid PayPal PKCS12 certificate/password. All of this may be obtained directly from PayPal itself (by hunting through an admittedly somewhat byzantine website for the said materials.)

Where is this software?

In the folder you installed it to. (Click **Start** > **All Programs** > **CFX_PayPalAPI** then the "Explore CFX_PayPalAPI Folder" icon to go directly there.)

Q: Does it work under platforms other than Windows?

It has not as of yet been tested under any other platforms, however, except for the use of the Windows Registry using a native JNI, it should.

regtool

This software has the ability to read the required PayPal PKCS12 certificates from the Windows Registry. If you are not using software that has already placed your P12 certificate in the registry you can use this simple Java tool to do such for you manually.

Places certificates into the HKEY_LOCAL_MACHINE registry hive.

Uses three arguments: certificate_file_name, registry_subkey_name, key_name.

For example:

```
C:\> java regtool cert.p12 SOFTWARE\mycompany\certs cert1
```

You can use `regedit` or `regedt32` to verify the data has been placed into the registry.

APICall Functions

Functions for Tag Status Information

- [About](#)
- [Information](#)
- [Protocol Versions](#)

Courtesy functions

- [CardPreValidation](#)
- [MassCardPreValidation](#)
- [EmailPreValidation](#)
- [MassEmailPreValidation](#)

PayPal WS API RPC Functions

- [MassPay](#)
- [RefundTransaction](#)
- [TransactionSearch](#)
- [GetTransactionDetails](#)
- [AddressVerify](#)

(Currently) Unsupported or Unofficial PayPal WS API RPC Functions

- [BillAgreementUpdate](#)
- [BillUser](#)

About

Returns information about the software itself. Of primary interest are the version and builddate.

Query Output Fields

Copyright The Copyright © notice.

Version The version of the software you are using

BuildDate The date the copy of this software you have was last build

Licensed Reports whether the software is operating in licensed mode or not. If in ""licensed"" mode then "true". Otherwise "false".

LicenseKeyValid If license key is valid then "true". Otherwise "false".

LicenseKeyCustomerName The name of the Person/Company/Organization that purchased the LicenseKey being used.

```
<CFX_PayPalAPI
  APICall="About"
  QueryName="PayPalAPIQuery"
>
```

Information

Returns some basic system information that may be of use when interfacing with or using the tag.

NOTE: The number of query fields returned by this function may, with subsequent revisions, expand in size.

Query Output Fields

QueryName The name of the query field this software returns its results in if you do not specify a name.

CurrentDirectory The folder this software thinks is its "home" folder. This is mainly of interest only if you plan on using your security certificates from the Windows Registry -- A JNI (Java Native Interface) file named "*ICE_JNIRegistry.dll*" is used to bridge the gap between Java and the Windows Registry, and this file is required to be in the folder this field names.

JavaClassPath The current Java CLASSPATH.

```
<CFX_PayPalAPI
  APICall="Information"
  QueryName="PayPalAPIQuery"
>
```

ProtocolVersions

Returns a query list of all the PayPal API protocols the software currently supports or knows about and the protocol level at which it deals with them. (A version of "0.0" indicates the protocol is known but currently not supported.)

For example, the protocols most commonly listed would include:

1. MassPay
2. RefundTransaction
3. TransactionSearch
4. GetTransactionDetails
5. AddressVerify

Query Output Fields

Protocol Protocol Name

Version Protocol Version

```
<CFX_PayPalAPI
```

```

    APICall="ProtocolVersions"
    QueryName="PayPalAPIQuery"
  >

```

CardPreValidation

Performs a series of basic checks against credit card information such as Luhn-mod-10 on card account-number, checks if expiry data is beyond expiration, compares number format to known valid formats.

This function currently can handle popular card formats from: Mastercard ("MASTERCARD"), Visa ("VISA"), Discover ("DISCOVER"), Diner's Club ("DCLUB"), En Route ("ENROU"), and JCB ("JCB").

Input Parameters

Issuer The issuing organization: I.E. "MASTERCARD","VISA","DISCOVER","DCLUB","ENROU" or "JCB".

Expiry The Expiry date: MM/YY.

AccountNumber The account number: E.X. 4111-1111-1111.

Query Output Fields

FormatValid "true" or "false". Reports whether the account number had the proper prefix and digit length as used by the stated issuer.

ChecksumValid "true" or "false". Performs a Luhn Mod-10 checksum on the account number to determine if the number is "valid". By this we mean that the built-in typographic digit indicates the account number was mostly likely typed in correctly with no typing mistakes. This does not indicate whether the account number is "valid" in the sense that the card has been activated by a credit card company and is in good standing.

ExpiryValid "true" or "false". Compares the stated expiry date to the current date *on the server is is running on*.

IssuerValid "true" or "false". Checks if the issuer known to this software. NOTE: Even if the card is unknown, the other functions ExpiryValid, ChecksumValid, CleanAccountNumber and Digits will function correctly. Only FormatValid and IssuerValid will depend on known issuers.

CleanAccountNumber Returns the account number stripped of everything except the digits.

Digits Returns a count of the number of "clean" (see CleanAccountNumber) digits.

```

<CFX_PayPalAPI
  APICall="CardPreValidation"
  Issuer="VISA"
  Expiry="12/06"
  AccountNumber="4111-1111-1111-1111"
  QueryName="PayPalAPIQuery"
>

```

MassCardPreValidation

See [CardPreValidation](#) for details.

MassCardPreValidation is exactly the same as **CardPreValidation** except that: Instead of accepting the three parameters *Issuer*, *Expiry*, *AccountNumber* for a single card, it takes as input a standard query with the three fields *Issuer*, *Expiry*, *AccountNumber*.

In this way you can, if you wish, retrieve the three temporary fields directly from an SQL database, and then send them straight to this tag without any further preprocessing.

This software will validate any number of rows of data you send it (within, of course, the limitations of your hardware, operating system and the CFML engine you are utilizing).

Performs a series of basic checks against credit card information such as Luhn-mod-10 on card account-number, checks if expiry data is beyond expiration, compares number format to known valid formats.

This function currently can handle popular card formats from: Mastercard ("MASTERCARD"), Visa ("VISA"), Discover ("DISCOVER"), Diner's Club ("DCLUB"), En Route ("ENROU"), and JCB ("JCB").

Query Input Fields

Issuer The issuing organization: I.E. "MASTERCARD","VISA","DISCOVER","DCLUB","ENROU" or "JCB".

Expiry The Expiry date: MM/YY.

AccountNumber The account number: E.X. 4111-1111-1111.

Query Output Fields

FormatValid "true" or "false". Reports whether the account number had the proper prefix and digit length as used by the stated issuer.

ChecksumValid "true" or "false". Performs a Luhn Mod-10 checksum on the account number to determine if the number is "valid". By this we mean that the built-in typographic digit indicates the account number was mostly likely typed in correctly with no typing mistakes. This does not indicate whether the account number is "valid" in the sense that the card has been activated by a credit card company and is in good standing.

ExpiryValid "true" or "false". Compares the stated expiry date to the current date *on the server is running on*.

IssuerValid "true" or "false". Checks if the issuer known to this software. NOTE: Even if the card is unknown, the other functions ExpiryValid, ChecksumValid, CleanAccountNumber and Digits will function correctly. Only FormatValid and IssuerValid will depend on known issuers.

CleanAccountNumber Returns the account number stripped of everything except the digits.

Digits Returns a count of the number of "clean" (see CleanAccountNumber) digits.

```
<CFX_PayPalAPI
  APICall="MassCardPreValidation"
  Query="mytempcctable"
  QueryName="PayPalAPIQuery"
>
```

EmailPreValidation

Does a "well-formed" check on an email address you provide to the function. This involves checking it is from a valid top-level domain and in the correct form.

Input Parameters

Email

The email address you passed to the function.

Query Output Fields**Email**

Valid "true" or "false"

CleanEmail The email stripped of non-valid characters.

```
<CFX_PayPalAPI
  APICall="EmailPreValidation"
  Email="myname@mycompany.com"
  QueryName="PayPalAPIQuery"
>
```

MassEmailPreValidation

See [EmailPreValidation](#) for details.

MassEmailPreValidation is exactly the same as [EmailPreValidation](#) except that: Instead of accepting *Email* as an attribute to the function call, it takes as input a standard query with the field *Email*.

In this way you can, if you wish, retrieve a list of emails directly from an SQL database, and then send them straight to this tag without any further preprocessing.

This software will validate any number of rows of data you send it (within, of course, the limitations of your hardware, operating system and the CFML engine you are utilizing).

Does a "well-formed" check on an email address you provide to the function. This involves checking it is from a valid top-level domain and in the correct form.

Query Input Fields**Email**

The email address you passed to the function.

Query Output Fields**Email**

Valid "true" or "false"

CleanEmail The email stripped of non-valid characters.

```
<CFX_PayPalAPI
  APICall="EmailPreValidation"
  Email="myname@mycompany.com"
  QueryName="PayPalAPIQuery"
>
```

```
<CFX_PayPalAPI
  APICall="MassEmailPreValidation"
  Query=myquerydata
>
```

```
> QueryName="PayPalAPIQuery"
```

The Control Parameters

All functions that call the PayPal Web Service have several common additional parameters that may or must be set. These are, for the most part, used for controlling secure access to the Web Service API and the way the resulting data is returned.

Note that APICall is always required as it determines which function you wish to call.

Control Parameter default values

APICall Determines which function is called.

LicenseKey The license key you are given when purchasing a copy of this software. If not present the only difference is that the software will only connection to PayPal's sandbox site at <https://api.sandbox.paypal.com/2.0/> which is used to test the software.

QueryName The name given to the query data that a function *returns*.

CertStorage Can be FILE or REGISTRY. This tells the software where, in general, you security certificate is to be found.

CertFormat Currently only PKCS12. The format of the security certificate used by PayPal.

CertLocation The exact location of the security certificate. For example, if CertStorage is of type FILE: `c:\mycerts\cert1.p12` or if CertStorage is of type REGISTRY: `SOFTWARE\mycompany\certs\mycert.`

CertPassword

Username Your PayPal API username. Note: This is different than your PayPal login username and is of a form like: `webmaster_api1.intrafoundation.com`. It is issued seperately from your PayPal account.

Password The password for you API username.

Subject

WSURL <https://api.paypal.com/2.0/> if licensed, or <https://api.sandbox.paypal.com/2.0/> if not.

Timeout Maximum timeout for the call in milliseconds.

Required Control Parameters

- APICall
- CertLocation
- CertPassword
- Username
- Password
- Subject
- WSURL

Optional Control Parameters

- LicenseKey
- QueryName
- CertStorage
- CertFormat
- Timeout

Control Parameter default values

```

APICall
LicenseKey
QueryName PayPalAPIQuery
CertStorage FILE
CertFormat PKCS12
CertLocation
CertPassword
Username
Password
Subject
WSURL https://api.paypal.com/2.0/ if licensed, or https://api.sandbox.paypal.com/2.0/ if not.
Timeout 60000

```

```

<CFX_PayPalAPI
  APICall="GetTransactionDetails"
  QueryName="PayPalAPIQuery"
  CertStorage="FILE"
  CertFormat="PKCS12"
  CertLocation="c:\certs\mycert.p12"
  CertPassword="mycertpassword"
  Username="webmaster_api1.mydomain.com"
  Password="myapipassword"
  Subject=""
  WSURL="https://api.sandbox.paypal.com/2.0/"
  Timeout=60000
  QueryName="PayPalAPIQuery"
>

```

"Abstract" Query Return Fields

All PayPal Webservice API functions will always return the following six (6) fields in addition to any other information related to the specific function call.

See official [PayPal API documentation](#) for further field information.

Query Output Fields

Timestamp The time the transaction was performed.

Ack A general acknowledgement token. Usually "success" or "failure".

CorrelationID

Version The protocol version.

Build The build of the protocol.

Errors A list of errors any warnings, if any, encountered during the API Call. An error/warning consists of four coma separated fields: The error code (such as "10001"), the severity code ("Error", "Warning", etc), the short or more general description of the error and the long or specific description of the error. More than one error/warning may be encountered in a call. Each set of errors is separated by a semicolon (";").

MassPay (PayPal WS API RPC Function)

Pays up to 250 people (PayPal accounts) at a time.

See official [PayPal API documentation](#) for further field information.

Parameter Input Fields

currencyID USD, JPY, GBP, EUR, CAD

Query Input Fields

ReceiverEmail A valid email address the money is to be sent to.

Amount The amount being sent.

UniqueID A merchant specific ID identifying the receiver.

Note Note, if any.

Query Output Fields

Timestamp

Ack

CorrelationID

Version

Build

Errors

Status "Success" or "Failure".

```
<CFX_PayPalAPI
  APICall="MassPay"
  Query="mytempcctable"
  QueryName="PayPalAPIQuery"
>
```

RefundTransaction (PayPal WS API RPC Function)

Refunds the full or a partial amount from a previous transaction. Can currently only be performed once per TransactionID.

See official [PayPal API documentation](#) for further field information.

Parameter Input Fields

TransactionID The TransactionID or txn_id in question.

RefundType "Full" or "Partial"

Amount Amount of currency being refunded. Leave blank if RefundType is "Full".

CurrencyCode USD, JPY, GBP, EUR, CAD

Memo

Query Output Fields

Timestamp

Ack

CorrelationID

Version

Build

Errors

```

<CFX_PayPalAPI
  APICall="RefundTransaction"
  TransactionID="0000000000000001"
  RefundType="Partial"
  Amount="5.00"
  CurrencyCode="USD"
  Memo="Sorry about the missing USB cable."
  QueryName="PayPalAPIQuery"
>

```

TransactionSearch (PayPal WS API RPC Function)

Searches through your transactions and returns a list of TransactionIDs based on your search criteria.

Requires the parameter "StartDate". All others are optional.

See official [PayPal API documentation](#) for further field information.

Parameter Input Fields (Required)

StartDate

Parameter Input Fields (Optional)

EndDate

PayerEmail

ReceiverEmail

TransactionClass

Amount

CurrencyCode

Status

PayerSalutation

PayerFirstName

PayerMiddleName

PayerLastName

PayerSuffix

TransactionID

ReceiptID

AuctionItemNumber

Query Output Fields

Timestamp

Ack

CorrelationID

Version

Build

Errors

TransactionID

Timestamp
Timezone
Type
Payer
PayerDisplayName
Status
GrossAmount
FeeAmount
NetAmount

```

<CFX_PayPalAPI
  APICall="TransactionSearch"
  StartDate="1/1/2002"
  QueryName="PayPalAPIQuery"
>

```

GetTransactionDetails (PayPal WS API RPC Function)

Get detailed information about the transaction identified by TransactionID.

See official [PayPal API documentation](#) for further field information.

Parameter Input Fields (Required)

TransactionID

Query Output Fields

Timestamp
Ack
CorrelationID
Version
Build
Errors
RecieverInfo_Business
RecieverInfo_Receiver
RecieverInfo_ReceiverID
PayerInfo_Payer
PayerInfo_PayerID
PayerInfo_PayerStatus
PayerInfo_Salutation
PayerInfo_FirstName
PayerInfo_MiddleName
PayerInfo_LastName
PayerInfo_Suffix
PayerInfo_PayerCountry
PayerInfo_PayerBusiness
PayerInfo_Name
PayerInfo_Street1
PayerInfo_Street2

PayerInfo_CityName
PayerInfo_StateOrProvince
PayerInfo_Country
PayerInfo_CountryName
PaymentInfo_TransactionID
PaymentInfo_ReceiptID
PaymentInfo_TransactionType
PaymentInfo_PaymentType
PaymentInfo_PaymentDate
PaymentInfo_GrossAmount
PaymentInfo_FeeAmount
PaymentInfo_SettleAmount
PaymentInfo_TaxAmount
PaymentInfo_ExchangeRate
PaymentInfo_PaymentStatus
PaymentInfo_PendingReason
PaymentInfo_ReasonCode
PaymentItemInfo_Custom
PaymentItemInfo_Memo
PaymentItemInfo_SalesTax
PaymentItemInfo_Name
PaymentItemInfo_Number
PaymentItemInfo_Quantity
PaymentItemInfo_Options
Subscription_SubscriptionID
Subscription_SubscriptionDate
Subscription_EffectiveDate
Subscription_RetryTime
Subscription_Username
Subscription_Password
Subscription_Recurrences
Subscription_TermsAmount
Subscription_TermsPeriod
Subscription_reattempt
Subscription_recurring
Auction_BuyerID
Auction_ClosingDate
Auction_multitem
PayerInfo_AddressStatus
PayerInfo_AddressName
PayerInfo_Phone
PayerInfo_PostalCode
PayerInfo_ExternalAddressID
PayerInfo_AddressID
PayerInfo_AddressOwner
PayerInfo_InternationalName
PayerInfo_InternationalStateAndCity
PayerInfo_InternationalStreet

<CFX_PayPalAPI

```

APICall="GetTransactionDetails"
TransactionID="00000000000000000001"
QueryName="PayPalAPIQuery"
>

```

AddressVerify (PayPal WS API RPC Function)

This function is used to verify that a specified email and address are on file with PayPal and verified.

Note: This function is currently available only to merchants using the PayPal "Enterprise" option. See the following [thread](#) on the PayPal forums.

See official [PayPal API documentation](#) for further field information.

Parameter Input Fields

Email Customer's email address
Street First line of street address (that is Street1)
ZIP ZIP code

Query Output Fields

Timestamp
Ack
CorrelationID
Version
Build
Errors
Email The email address you specified.
StreetMatch Response indicating if the street matched. "None", "Matched", "Unmatched".
ConfirmCode Response indicating if the email address is on file at paypal.
ZIPMatch Response indicating if the ZIP code matched.
CountryCode The countrycode on file with PayPal that is attached to the email address in question.
PayPalToken A 24-hour token used to prevent address tampering.

```

<CFX_PayPalAPI
  APICall="AddressVerify"
  Email="customer@company.com"
  Street="Box 1 Main Street"
  ZIP="12345"
  QueryName="PayPalAPIQuery"
>

```

BillUser (PayPal WS API RPC Function)

Unofficially under beta testing by PayPal.

BillAgreementUpdate (PayPal WS API RPC Function)

Unofficially under beta testing by PayPal.

TellFortune (PayPal WS API RPC Function)

Semi-official PayPal function for testing connections. Given a "name" it returns with a random fortune-cookie type fortune.

Not implimented.

Parameter Input Fields

Name User name

Query Output Fields

Timestamp

Ack

CorrelationID

Version

Build

Errors

Fortune Your fortune.

```
<CFX_PayPalAPI
  APICall="TellFortune"
  Name="myname"
  QueryName="PayPalAPIQuery"
>
```

Reference Links

Further technical and practical information may be found at the following locations:

- developer.paypal.com
- paypaltech.com (paypaltech.org) (paypaltech.net)
- paypalhacks.com

Technologies Involved

This software was developed under **Java 1.4** using the **Eclipse** 3.01 IDE.

Other software, tools or libraries used to create or use in it include:

- ColdFusion Java CFX API
- Axis (SOAP) 1.1
- Xerces 1.4.4
- com.ice.jni.registry
- PayPal API
- Ebay API

Copyright Notice

This software is Copyright (c) 2004 by Lewis A. Sellers of Intrafoundation Software.

Portions of this software make use of:

1. **com.ice.jni.registry** by *Tim Endres* for Windows Registry functions.
2. **Apache Axis** 1.1 for SOAP communications and WSDL binding.

Version History

- **v1.5 December 15th 2004.**

Seriously considering dropping the CFX API to see if that will get around one of the two issues that is holding this up....

It currently works as is on dedicated or single merchant machines however....

- **v1.4 December 9th 2004.**

Limited beta tomorrow.

Currently there only two issues to be resolved, though they are serious issues: 1) Getting the SSLFactory to work without affecting the global Axis properties and 2) passing the cert to the SSLFactory with other than static variables.

It's very quiet among the dev communities as how to manage either of these which has me a little worried it might not be possible at all.

- **v1.3 December 4th 2004.**

First full beta version. Removed ProxyHost/ProxyPort options as it is most likely best (for shared server situations) to simply let the webmaster use the JVM parameters http.proxyhost and http.proxyport

- **v1.2 beta.** November 23rd 2004
- **v1.1 beta.**
- **v1.0 beta.**