Oracle® iPayment

Implementation Guide

Release 11*i*

January 2001

Part No. A86047-02

ORACLE®

Oracle iPayment Implementation Guide, Release 11*i*

Part No. A86047-02

Contents

D Back-End Processing APIs

E Extensibility

Send Us Your Comments

Oracle iPayment Implementation Guide, Release 11*i*

Part No. A86047-02

Oracle Corporation welcomes your comments and suggestions on the quality and usefulness of this document. Your input is an important part of the information used for revision.

- Did you find any errors?
- Is the information clearly presented?
- Do you need more information? If so, where?
- Are the examples correct? Do you need more examples?
- What features did you like most?

If you find any errors or have any other suggestions for improvement, please indicate the document title and part number, and the chapter, section, and page number (if available). You can send comments to us in the following ways:

- Electronic mail: Shalini.Narang@oracle.com
- FAX: (650) 654-6223 Attn: Oracle iPayment Documentation
- Postal service:
  Oracle Corporation
  Oracle iPayment Documentation
  500 Oracle Parkway, 659603
  Redwood City, CA 94065
  USA

If you would like a reply, please give your name, address, telephone number, and (optionally) electronic mail address.

If you have problems with the software, please contact your local Oracle Support Services.

Preface

This guide provides general descriptions of the setup and configuration tasks required to implement Oracle iPayment successfully.

Intended Audience

This guide is intended for anyone who is implementing Oracle iPayment.

Related Documents

For more information, see the latest versions of the following manuals.

- iPayment JavaDoc (Available on Metalink)
- Apache Server Documentation (http://www.apache.com)
- Oracle Applications Developer's Guide
- Oracle Applications System Administrator's Guide
- Oracle iStore and Oracle iMarketing Implementation Guide
- CRM Foundation Components Implementation Guide
- CRM Foundation Components Concepts and Procedures
- Apache's mod-ssl documentation (http://www.mod-ssl.org/docs).
- Java Developer's Guide (http://www.sun.com)
- Merchant Connection Kit (MCK) Documentation (http://www.cybercash.com/cashregister/download.html)
- CheckFree Implementation Guide (http://www.checkfree.com)

Conventions

The following typographic conventions are used in this manual:

Convention	Meaning
italic text	Book titles
`Courier text`	User commands and file content examples
UPPERCASE	Structured Query Language (SQL) commands, initialization parameters, profile options, responsibilities, or environment variables
boldface text	Menu, button, keyboard, and form options
< >	Angle brackets enclose user-supplied names. Note: Do not type the angle brackets.

1

Overview

Topics include:

Planning Your Implementation

Before you begin implementing iPayment, you must make several key business and application decisions.

The following sections help you find answers to these questions. Your answers determine which APIs you should use, which parameters you must pass, and which code samples are relevant to your applications to help you implement iPayment.

Which APIs Should Electronic Commerce Applications Handle?

iPayment provides payment instrument registration APIs for registering payment instruments such as credit cards, bank accounts, and purchase cards. It also provides payment transaction APIs that can perform credit card and purchase card operations, such as, authorization, capture, and bank account transfer operations. Risk evaluation APIs are provided to perform risk analysis. Based on your requirements, you have to decide which operations your electronic commerce applications need to implement.

Payment Instrument APIs

These APIs are mandatory if you decide to use the offline payment processing feature of iPayment Payment APIs in your electronic commerce application. Electronic commerce applications can implement registration of payment instruments using Payment Instrument Registration APIs, and instrument identifiers, that are generated, during payment requests with iPayment.

Payment Processing APIs

You have to decide whether to

- Implement online or offline payment processing or both
- Accept credit card payments, purchase cards, or bank account transfers or a combination
- Implement the risk functionality to detect fraudulent transactions

Risk APIs

iPayment provides two Risk APIs. If you want to perform risk evaluation independently and not as part of the Authorization API, then these independent APIs can be called from your electronic commerce application.

The following information describes some of the decisions you have to make in case you are accepting bank account transfer payments or in case you are accepting credit card or purchase card payments.

Which Bank Account Transfer Operations Should You Implement?

iPayment only supports offline bank account payment requests. Besides payment requests for bank account transfers, iPayment also supports modification, cancellation, and inquiry operations. There is no need for any special settlement operations.

Which Credit Card and Purchase Card Operations to Implement?

iPayment provides APIs for authorization, settlement, and reconciliation. You do not have to use all these APIs. You can choose to have your electronic commerce application handle only authorization, thus reducing development costs but requiring the payee to do more work for settlement and reconciliation.

The following table compares the two approaches.

Table 1–1 Comparison of Authorization Only with Authorization and Settlement

Authorization Only	Authorization and Settlement
The integration effort is relatively minimal because you have to use no more than two APIs.	The integration effort is significant because you have to use several APIs.
The payee has to settle transactions through the native payment system administration tool. (For example, by going to the payment system's web page).	The payee can settle transactions directly through the electronic commerce application.

Note: For setting up credit card payments in iStore, see the latest *Oracle iStore and iMarketing Implementation Guide.*

Which Risk Factors Should You Implement?

iPayment provides risk management functionality for credit card and purchase card transactions for electronic commerce applications for both business-to-business and

business-to-consumer models. iPayment includes a number of built-in risk factors and provides the option to the payees to run or not run the risk evaluation functionality for each payment operation. Payees can also run the risk evaluation for operations which handle amounts exceeding a specified amount.

A risk factor includes any information which a payee wants to use to evaluate the risk of the customer wanting to buy goods or services from the payee. Examples of risk factors are: address verification, time of purchase, payment amount, etc. These risk factors can be configured for each payee (merchant or biller).

Risk management functionality enables payees and electronic commerce service providers to manage the risk involved in processing transactions online. It allows businesses to have any number of predefined risk factors to verify the identity of their customers, assess their customer credit rating, and risk rating in a secure environment. For more information, see the latest *Oracle iPayment Concepts and Procedures.*

Which Payment System Should You Use?

iPayment requires partnering with a third party payment system for communicating to bank processors and acquirer's banks. Some of the factors which may help you decide are:

- Do you want to use an existing integration or build your own?
- Do you want to integrate with a vendor offering a product or a service?
- Does the payment system support the payment methods that you are implementing, e.g, CheckFree only supports bank account transfers?

Is Your Merchant Terminal Based or Host Based?

The choice of being a terminal-based or a host-based merchant is generally determined by the business type, number of transactions per day, and the model supported by the acquiring bank. As a developer of an electronic commerce application, you only need to know the type of payee for which you're developing the application, so that you can choose the appropriate APIs.

If your payee is terminal-based, then you may integrate the Close Batch API into the electronic commerce application, thus enabling the payee to do close batches through the electronic commerce application instead of the payment system's native interface. If your payee is host-based, then you may want to ignore the Close Batch API because the processor automatically closes batches at predetermined intervals.

If the payee is host-based, then payment capture takes care of getting the payment, and reconciliation is not necessary. Therefore, the Close Batch API and the Query Batch Status API are not required for host-based payees.

Does Your Application Need to Present Information in Different Languages?

If your application needs to present information in different languages or character sets, then you need to know about national language Support (NLS).

Would Your Application Need National Language Support (NLS)?

Your application may need to use NLS if either of the following is true:

- The electronic commerce application and the payment system use different languages or character sets. For example, the electronic commerce application may use a Japanese EUC character set while the payment system uses a Japanese Shift-JIS character set.
- Clients of the electronic commerce application use different languages. For example, a web site that is expecting customers from all over the world might want to present its electronic commerce application in different languages for different customers.

To enable character conversion in all these environments, the electronic commerce application and the payment system must convey the language and character set information to iPayment.

How Do Applications Convey Language Information to iPayment?

To communicate information about the language and character set to iPayment, an electronic commerce application and payment system servlet must pass a special parameter (`NlsLang`). This parameter is a part of every API included in this guide.

`NlsLang` is an optional parameter. If your electronic commerce application does not need to handle non-Latin1 character set parameters and does not need to communicate to clients or payment systems in different languages, you do not need to use this parameter.

How does iPayment Use NlsLang?

If the electronic commerce application does not pass the `NlsLang` parameter, iPayment passes information from the electronic commerce application to the payment service servlet without performing any conversion of character sets.

If the electronic commerce application does pass a value for NlsLang to iPayment, then iPayment tries to convert parameters based on the value of NlsLang before sending those parameters to the payment system servlet.

To do so, iPayment first checks its database for the list of preferred and optional languages for that payment system. The information in the database reflects what the iPayment administrator entered using the iPayment administration user interface.

Second, iPayment does one of the following, depending on what it finds in the database:

- If the database lists a language that matches the value of NlsLang, iPayment keeps the value of NlsLang and passes it to the payment system servlet.
- If the database does not list a language matching the value of NlsLang, iPayment uses the language specified as the preferred language for that payment system, thus changing the value of NlsLang before sending it to the payment system servlet.

Finally, iPayment converts the values of other parameters so that they are sent to the payment system servlet in the language specified by NlsLang.

This conversion process works only in one direction. From the electronic commerce application to the payment system servlet. If the payment system sets up NlsLang when it sends the data back, iPayment uses that information only to store the value of OapfVendErrmsg in its database. iPayment does not convert data sent from the payment system servlet back to the electronic commerce application.

Format of the NLS_LANG Parameter

The value of this parameter follows the same format as Oracle Server's NLS_LANG environment variable:

```
language_territory.charset
```

For example, JAPANESE_JAPAN.JA16EUC is a valid value for NlsLang.

Format of the Response Body Data From Payment System Servlets

iPayment does not convert the response received from the payment system servlet in the response body. It only treats the data as binary and sends it directly to the electronic commerce application.

However, if any binary information is sent (such as wallet data), then iPayment converts the character set of the binary data to that specified by the value of NlsLang.

Installing iPayment

To install iPayment, See the latest *Installing Oracle Applications 11i.*

2

Configuring iPayment Payment Engine

Topics include:

Overview of iPayment Implementation Steps

The following table gives you an overview about the steps that are required for implementing iPayment in different scenarios.

Table 2–1 iPayment Implementation Steps

Implementation Steps	Standalone new install or 3i standalone implementation upgrading to 11i standalone	iPayment with other preintegrated Oracle Applications[1]	3i implementation upgrading to 11i[2]
Creating an iPayment Administrative User	Mandatory	Mandatory	Mandatory
Configuring the ECApp Servlet	Mandatory if you are using PL/SQL APIs	Mandatory	Mandatory
Configuring the Scheduler Servlet	Mandatory if you are processing offline payments	Not Utilized. The integrated applications do not utilize this functionality	Not Applicable
Configuring iPayment CyberCash Servlet	Mandatory if you are using Cybercash as a payment system	Mandatory if you are using Cybercash as a payment system	Mandatory if you are using Cybercash as a payment system
Registering Electronic Commerce Applications	Mandatory	Not Necessary	Not Necessary
Loading Risky Instruments	Optional	Not Utilized.The integrated applications do not utilize this functionality	Not Applicable
Configuring the Scheduler	Mandatory if you are processing Offline payments	Not Utilized. The integrated applications do not utilize this functionality	Not Applicable

Table 2–1 iPayment Implementation Steps

Implementation Steps	Standalone new install or 3i standalone implementation upgrading to 11i standalone	iPayment with other preintegrated Oracle Applications[1]	3i implementation upgrading to 11i[2]
Implementing Electronic Commerce Applications APIs	Mandatory	Not Necessary-has already been implemented	Not Applicable
Implementing CheckFree	Mandatory is you are using CheckFree as a payment system	Bank Account Transfers are not utilized	Not Applicable
Implementing Payment Systems APIs	Mandatory if you are not using either Cybercash or CheckFree.	Mandatory if you are not using either Cybercash or CheckFree	Implement as a servlet and not as a cartridge

[1] Preintegrated Oracle Applications include iStore, Order Capture, Telesales, Order Management, Account Receivables, and Collections.

[2] 3i Implementation upgrading to 11i but retaining existing functionality (same as a non-Oracle client).

Creating an iPayment Administrative User

You can access the iPayment user interface with a separate administrative user. By using this procedure, the iPayment administrator is separated from the sysadmin user and is allowed better security. You can then login as this created administrative user,

Prerequisites

- Oracle 11i installed.
- iPayment with responsibility, menu, security roles, and permissions should be installed.

Steps

1. Access the iPayment user interface through the Oracle Admin Console at the following URL:

   http://<machine>:<port>/html/jtflogin.jsp or

   http://<machine>:<port>/html/jtfdefaultlogin.jsp

   Replace the machine and the port with the name of the machine and the port where the Apache server is installed.

2. Login as:
   Username: SYSADMIN
   Password: SYSADMIN

3. Navigate to the Users tabs on the Admin Console. Click **Add**. Create an End User. This user will be your new iPayment administrative user.

   Note: An End User is an individual not representing an organization. A Business User is an individual who represents an organization.

4. Navigate to Self Service Applications Login screen to access Oracle ERP Applications or Oracle Applications Forms screen from the following URL: http://<webdb 2.5 hostname>:<web port id>/QA_HTML/<LANGUAGE_CODE>/ICXINDEX.htm

   Login to Oracle Applications as:
   Username: SYSADMIN

Password: SYSADMIN
Select System Administrator responsibility.

5. Navigate to the **Security/Responsibility/Define** Form and find the Payment Administrator responsibility. On the Help menu, point to **Diagnostics** and then click **Examine**. Write down the **Responsibility ID number** for the Responsibility_ID field.
6. Navigate to the Profile/System Profile Option in the form.
7. Click **User.** Type the newly created user name in the field.
8. Search for JTF_PROFILE_DEFAULT% profile option using wildcards.
9. Edit the profile fields for the user id that was created.

   JTF_PROFILE_DEFAULT_APPLICATION: appID (for iPayment it is 673).

   JTF_PROFILE_DEFAULT_RESPONSIBILITY: respID. (This is the responsibility

   ID of the Payment Administrator responsibility).

   There are additional, less important profiles which can also be set up (ie,ICX_ LANGUAGE). If these profiles are not set up, the site's default profiles are used. For a complete list of profile options, see the section about System Profile Options in the latest *CRM Foundation Components Implementation Guide*. For more information, see the section on Setting User Responsibilities for an existing AOL User in the latest *CRM Foundation Components Concepts and Procedures*.
10. Click System Administrator responsiblity. Navigate to Security-->User-->Define.
11. Query the user that you created or added on jtflogin screen.
12. Click Responsibility and choose Payment Administrator from the List.
13. Click Save.
14. Exit from Self Service Applications.
15. Login to the Admin Console from the following URL:
    http://<machine>:<port>/html/jtflogin.jsp
    Log on as a sysadmin. Click **User/Assign Roles**.
16. Find and select the user that you created. Add IBY_PAYMENT_MANAGER_ ROLE in the Assigned Role field and click **Update**. For more information, See the section on Assigning Roles to the User inthe latest *CRM Foundation Components Implementation Guide.*

17. Log off as sysadmin and login to the admin console using the newly created user as the iPayment Administrator.

Troubleshooting

Table 2–2 Common Errors in Creating an Admin User

Error	Description
Currently you do not have the appropriate permissions to access the page.	The user was not assigned the correct role. Again Log on to Admin Console as SYSADMIN and reassign the IBY_PAYMENT_MANAGER_ROLE to the user.
Wrong menu tree or the wrong application loaded during log in.	Set up the JTF_PROFILE_DEFAULT_APPLICATION and JTF_PROFILE_DEFAULT_RESPONSIBILITY profile values for the user to iPayment values.

Configuring iPayment Servlets

iPayment has several Java Servlets which are not configured as a part of Oracle Applications Rapid Installation process. Follow the instructions given below to configure them.

These instructions assume that you know how to configure Java Servlets with Apache Web Server. In particular, we assume you know where to find Apache and JServ configuration files on the node where the Apache Web Server is installed. For more information, see Apache documentation available at http://www.apache.org.

Note: This guide includes instructions for several platforms. We assume you are familiar with the particular platform you are configuring. For example, environment variables in UNIX look like $ABC/lib. In Windows NT, the environment variables will look like %ABC%\lib.

Logon to Web Server Node

Log on to your Web Server node as the applmgr user and run the environment file to set up the Oracle Applications environment. Your environment should have the following variable defined:

$IBY_TOP refers to the top-level directory of Oracle iPayment installation. In Windows NT or 2000, iPayment top level directory is located in %APPL_TOP%\iby.

Note: Apache and Jserv may not interpret environment variables in their configuration files. Expand any environment variables of the type $ABC to the values they actually contain on your installation. For example, if $IBY_TOP is defined at /u03/apps/iby/11.5, you need to replace $IBY_TOP with /u03/apps/iby/11.5 in the instructions below.

Verify That a Common Servlet Zone is Configured in Your Environment.

A servlet zone should already exist in your Apache Web Server installation. Check the jserv.properties file for a line beginning with "zones=". If you see such a line, a servlet zone has been set up. By default this zone is called "root". The root zone is associated with the zone.properties file. It you are using a different zone and not the root zone, you may have to make the changes listed below in a different <SERVLET_ZONE>.properties file. Similarly, your servlets will be invoked as:

http://<hostname>:<port>/<SERVLET_ZONE>/<servlet_name>

Configuring the ECApp Servlet

An ECApp servlet is needed to use the PL/SQL API of iPayment and for iPayment 3i Backward Compatibility API.

Set up the Virtual Path Mapping for ECApp Servlet

Add the following line to your zone.properties file in the Servlet Aliases section:
servlet.ecapp.code=oracle.apps.iby.ecservlet.ECServlet

This allows the ECAppservlet to be invoked as:
http://<hostname>:<port>/servlet/ecapp

Where <hostname> is the name of the server on which you are running iPayment. <port> is the port number where ECAppservlet has been installed.

Configuring the Scheduler Servlet

This section is required if you want to set up a Scheduler in iPayment. A Scheduler is required if you process off-line payment operations.

Set up the virtual path mapping for the Scheduler servlet.

Add the following line to the zone.properties file in the Servlet Aliases section.

```
servlet.scheduler.code=oracle.apps.iby.scheduler.PSReqHandler
```

This allows the servlet to be invoked as:
http://<hostname>:<port>/servlet/scheduler

Configuring iPayment CyberCash Servlet

CyberCash is a Secure Socket Layer (SSL) payment system supporting credit card transactions using Merchant Connection Kit (MCK) and bank account transfers using CyberCash's PayNow services. It supports all iPayment core operations.

CyberCash Payment System Servlet is only needed if you are planning to process the credit card and Bank Transfer payments through the CyberCash Service. For more information see the section on Payment Systems in Understanding iPayment in the latest *iPayment Concepts and Procedures.*

iPayment integrates with MCK version 3 which connects to CyberCash. Use the following parameters in the iPayment administration user interface while setting up CyberCash as the payment system:

Table 2–3 Parameters for setting up CyberCash as the payment system

Property	Value
Name	CyberCash
Suffix	cyb (do not use CYB or Cyb)
Base URL	http://<machine_name>.com:<port>/servlet *The machine where CyberCash servlet is to be installed, and any active port, for example:* http://www.merchant.com:9997/servlet
Admin URL	http://amps.CyberCash.com

Installing the CyberCash Servlet

Use the following procedure to configure CyberCash Merchant Connection Kit, also known as MCK to work with Oracle iPayment

1. Set up a merchant account with CyberCash at http://www.CyberCash.com if you do not have one.
2. Download CyberCash's Merchant Connection Kit (MCK) from http://www.CyberCash.com. Follow CyberCash's instructions to install the MCK.

Note: If your MCK is located inside the firewall and your firewall requires a proxy for outbound communication, then add the following parameters to the MCK merchant_conf file. The merchant_conf file is located in the

<MCK_HOME>/<merchant-name>/mck-cgi/conf directory:

HTTP_PROXY_HOST=<hostname>

HTTP_PROXY_PORT=<port>

---

3. Go to the directory where the MCK C libraries are located. The installation directory should be named mck-<version>-<operating system>. For example, if you installed MCK version 3.2.0.6 on Solaris under the /usr/oracle directory, you should do the following:

   % cd /usr/oracle/mck-3.2.0.6-sparc-sun-solaris2.6/c-api/lib

   On Windows NT, the location may be:

   D:\>cd \mck-3.2.0.6-nt\c-api\lib

4. Copy the three MCK libraries mentioned below into the $IBY_TOP/lib (or %IBY_TOP%\lib on Windows NT) directory:

   % cp libCCMck.a $IBY_TOP/lib

   % cp libmckcrypto.a $IBY_TOP/lib

   % cp libmd5hash.a $IBY_TOP/lib

   On Windows NT, the commands will be:

   D:\> copy libCCMck.lib %APPL_TOP%\iby\11.5.0\lib

   D:\> copy libmckcrypto.lib %APPL_TOP%\iby\11.5.0\lib

   D:\> copy libmd5hash.lib %APPL_TOP%\iby\11.5.0\lib

Note: The version number 11.5.0 may differ if you have a different version. Replace 11.5.0 with your specific version number.

5. Go to the $IBY_TOP/admin/driver directory: % cd $IBY_TOP/admin/driver

   (or >cd %APPL_TOP%\iby\11.5.0\admin\driver on Windows NT/2000)

Note: Edit file ibysub01.drv. Make two lines starting with the comment character active by removing the comment character.

6. Go to the $IBY TOP/lib directory: % cd $IBY_TOP/lib.
   (or>cd %APPL_TOP%\iby\11.5.0\lib on Windows NT/2000).

7. Start AD Administration with its command name.
   For UNIX users: $ adadmin
   For NT users: C:\>adadmin
   After you answer the AD administation questions, the utility takes you to the main menu. Select "Relink Applications programs."
   Log File: the default AD administration log file name is adadmin.log. It is located in $APPL_TOP/admin/<db_name> is the value of your ORACLE_SID or TWO_TASK variable. NT users will find the log file in %APPL_TOP%\admin\<db_name>\log.

8. Set up the wrapper.env variable in the file jserv.properties as follows:

   .properties files are generally located in etc directory of your top Jserv engine directory (e.g. /d1/testcomn/util/apache/1.3.9/Apache/Jserv/etc):

   wrapper.env=LD_LIBRARY_PATH=$IBY_TOP/bin

   In Windows NT or 2000, set wrapper.env=PATH=%APPL_TOP%\iby\11.5.0\bin

   If there is already a line wrapper.env=LD_LIBRARY_PATH=..., then append the above location as you would append the LD_LIBRARY_PATH environment variable. For example, if you have the following line

   wrapper.env=LD_LIBRARY_PATH=$ABC/lib

then, **add** ":$IBY_TOP/bin" at the end of the line:

wrapper.env=LD_LIBRARY_PATH=$ABC/lib:$IBY_TOP/bin

For Windows NT, it should be

wrapper.env=PATH=%ABC%\lib;%APPL_TOP%\iby\11.5.0\bin

9. Set up a virtual path mapping for the CyberCash servlet.

   Insert the following line in the zone.properties file, in the Servlet Aliases section.

   servlet.oramipp_cyb.code=oracle.apps.iby.bep.cybercash.CybServlet.

   This allows the servlet to be invoked as:
   http://<hostname>:<port>/servlet/oramipp_cyb.

10. Set the servlet init parameters. There are several initialization parameters that are recognized by the Oracle iPayment CyberCash Servlet. Set these initialization parameters by inserting the following line in the zone property file <SERVLET_ZONE>.properties file in the Aliased Servlet parameters section.

> **Note:** Replace $MCK_HOME with the absolute path of the MCK installation and replace $IBY_TOP with the absolute path of the iPayment installation.

```
servlet.oramipp_cyb.initArgs=mckhome=$MCK_HOME,debug=false,logfile=$IBY_
TOP/log/ibycybserv.log
```

In Windows NT, set it to:

```
servlet.oramipp_cyb.initArgs=mckhome=%MCK_HOME%,debug=false,logfile=%APPL_
TOP%\iby\log\ibycybserv.log
```

The following initialization parameters are recognized by the CyberCash Servlet:

- **Mckhome**: This parameter is mandatory. It's the directory path that points to the location where the CyberCash Merchant Connection Kit is installed. For example, if a merchant named, test-mck has been installed in such a way that its associated files can be found under the directory /usr/oracle/mck/test-mck, then mckhome should be set to /usr/oracle/mck. Transaction requests to iPayment will fail if mckhome is not set correctly.

- **debug**: This parameter is optional. If set to true, then the servlet will print debugging information to the body of its responses in plain text. This information includes the inputs sent to the servlet during the request, and the outputs the servlet sends for its response. If an exception is thrown during the processing of the request, then a stack trace is also printed.
- **logfile:** This parameter is optional. It's a string which specifies the fully qualified path name of the log file location. The input and output values of each transaction are written to this file, and a stack trace if an exception is thrown. If this parameter is not set, logging will be turned off.
- **singlemerch**: This parameter is optional, but may only be set up if the servlet always uses the same CyberCash merchant. The singlemerch parameter helps improve the performance of the CyberCash servlet by eliminating some of the overhead work that is done for multiple merchants. Set up the parameter's value to the CyberCash merchant id. For example, if you are only using the merchant test-mck, use the following initialization argument string:

```
servlet.oramipp_cyb.initArgs=mckhome=$MCK_HOME,debug=false,logfile=$IBY_
TOP/log/ibycybserv.log,singlemerch=test-mck
```

Performance Considerations for iPayment CyberCash Servlet

The CyberCash servlet makes calls via JNI to CyberCash's C-implemented Merchant Connection Kit (MCK). The MCK is not thread-safe when multiple Cybercash merchants are used. The CyberCash servlet must synchronize access to the MCK, in effect serializing concurrent requests so that each one begins only after a previous one finishes. To improve performance in the case of a single merchant, i.e. when the servlet always uses the same CyberCash merchant, it is recommended that you use the singlemerch parameter. To improve the performance in cases of both the single merchant or multiple merchants, it is necessary to take advantage of a new feature in JServ called load balancing. Load balancing allows requests sent to a single servlet zone to be serviced by multiple JServ instances. Since each JServ instance is a separate process, calls to the MCK occur in distinct memory spaces, allowing multiple concurrent requests to the CyberCash servlet to be successfully processed.

Installing a Load Balanced Servlet Zone

To load balance a servlet zone, make the following changes to your jserv.conf file:

1. For each JServ instance you will reference, include a directive of the form:

   ApJServHost <INSTANCE_NAME> <PROTOCOL>://<HOST>:<PORT>

   For example: ApJServHost PC1 ajpv12://localhost:7777

Note: Only one protocol is allowed within a zone. You should choose the default one, such as ajpv12.

2. Group JServ instances into sets with the following directive:

   ApJServBalance <SET_NAME> <INSTANCE_NAME>

   For example: ApJServBalance set1 PC1

   ApJServBalance set1 SUN1

3. Define the load-balanced servlet zone with the directive:

   ApJServMount <URL> balance://<SET_NAME >/<SERVLET_ZONE_NAME>

   For example: ApJServMount /cybserv balance://set1/cybserv

Note: Each JServ instance within the set must have a servlet zone of the given name defined. Using the example above, each JServ instance must have a cybserv zone.

4. Define the shared memory file used by Apache HTTP listeners to keep track of the status of JServ instances use the directive: ApJServShmFile <MEM_FILE>

Note: Note that you may wish to over-write the memory file between Apache restarts to flush old status information.

After jserv.conf is modified to reflect your installation, restart Apache and make sure each JServ instance within the load balanced zone is running. To manually start a JServ instance, do the following steps:

1. Make a copy of your jserv.properties file, assumed to be correctly configured for the CyberCash servlet, for each JServ instance you will run in the new zone.
2. For each properties file, set port to a value correct for that instance.
3. Set your shell environment variables CLASSPATH and LD_LIBRARY_PATH to the values the variables have in your jserv.properties file.

4. From the command line run the command:

   java -classpath $CLASSPATH org.apache.jserv.JServ <PROPERTY_FILE> <LOG_FILE> 2>&1

   The property file is the jserv.properties file you have correctly configured for that particular instance.

Load Balancing Recommendations

The maximum number of concurrent requests that the CyberCash servlet will be able to process without blocking is equal to the number of JServ instances running in its servlet zone. You should have a number of JServ instances running equal to the average number of concurrent requests, if not slightly more since, under load balancing, JServ instances are randomly chosen, making it possible that two concurrent requests could be sent to a JServ instance when an idle one is already available.

Running multiple JServ instances within a zone will not add significantly to your CPU load versus running a single instance. It will, however, add to your memory load as each instance requires its own JVM. On Solaris, each JVM requires over 6MB of main memory though less than 4MB are actually used since JVMs will share common libraries.

Registering Electronic Commerce Applications

All the APIs that an electronic commerce application calls must pass its identifier. This allows iPayment to track the application from where the requests are coming. The identifier generated during registration must be stored by the application. The electronic commerce application needs to pass the identifier in the API calls. iPayment provides an ECConfig utility, to add, modify, or list electronic commerce applications.

Requirements for Setting up and Using the ECConfig Utility

- Java executable in your application environment.
- apps.zip in your CLASSPATH environment variable. The apps.zip is included in the classpath after you set up the applications environment

Using the EcConfig Utility

- To add an electronic commerce application, use the following command:

```
java-DJTFDBCFILE=<dbc file location>-Dframework.Logging.system.filename=<log
```

```
file> -Dservice.Logging.common.filename=<logfile> oracle.apps.iby.ecapp.EcConfig
add "Ec App Name" "Short Name"
Example: java-DJTFDBCFILE=<dbc file
location>-Dframework.Logging.system.filename=<log file>
-Dservice.Logging.common.filename=<logfile> oracle.apps.iby.ecapp.EcConfig add
"my ec application"  "myapp"
```

- To modify a registered electronic commerce application, use the following command:

```
java-DJTFDBCFILE=<dbc file location>-Dframework.Logging.system.filename=<log
file> -Dservice.Logging.common.filename=<logfile> oracle.apps.iby.ecapp.EcConfig
modify <id> 'Ec App Name' 'Short Name'
```

<id> is the identifier of the electronic commerce application that was generated while adding the electronic commerce application. You can also retrieve the identifiers of applications using the list command.

Example: java-DJTFDBCFILE=<dbc file location>-Dframework.Logging.system.filename=<log file> -Dservice.Logging.common.filename=<logfile> oracle.apps.iby.ecapp.EcConfig modify 1234 "ec app name" "ecapp"

- To list all the registered electronic commerce applications use the following command:

```
java-DJTFDBCFILE=<dbc file location>-Dframework.Logging.system.filename=<log
file> -Dservice.Logging.common.filename=<logfile> oracle.apps.iby.ecapp.EcConfig
list
```

Loading Risky Instruments

The Risky Instruments upload utility is a Java application used to store risky payment instruments. It is called RiskyInstrUtil.

Requirements

- Java executable in your application environment
- apps.zip in the CLASSPATH. The apps.zip is included in the classpath after you set up the applications environment.

Java Commands

```
java-DJTFDBCFILE=<dbc file location> -Dframework.Logging.system.filename=<log
file> -Dservice.Logging.common.filename=<logfile>
```

```
oracle.apps.iby.irisk.admin.RiskyInstrUtil [ADD/DELETE] [filename]
```

This command requires an operation and a filename. It modifies the risky instruments table in the database depending on the entries in the file.

Or

```
 java-DJTFDBCFILE=<dbc file location>-Dframework.Logging.system.filename=<log
file> -Dservice.Logging.common.filename=<logfile>
oracle.apps.iby.irisk.admin.RiskyInstrUtil DELETE all
```

This command deletes all the risky instruments in the table.

File Format

- Each line corresponds to one risky instrument.
- The fields are comma separated and are in the following order: Payee identifier, instrument type, and creditcard number. Instrument type has to be a CREDITCARD. For example:
  - payee1, CREDITCARD, 4500234023453345
- For the add operation, each risky instrument in the file, that has a valid payee identifier, instrument type, and a new credit card number, is added to the table.
- For the delete operation, each risky instrument that matches the payee identifier, instrument type, and the credit card fields, is deleted from the table.
- The command prints the results of the operation on each risky instrument in the file.

Configuring the Scheduler

The scheduler is based on a servlet architecture and can be configured as a concurrent program. The scheduler runs at configured intervals to send payment requests to the payment systems.

Concurrent Programs as a Standard Request

Use the following procedure to include the Concurrent Programs as part of a Standard Request.

Prerequisites

Familiarity with the concept of Oracle Java concurrent program. Please refer to the latest version of *Oracle Applications Developer's Guide* for details. Also see the latest version of *Oracle Applications System Administrator's Guide* for details.

Steps

1. Log on to Self Service Applications as
   Username: SYSADMIN
   Password: SYSADMIN.
2. Select the System Administrator Responsibility.
3. Navigate to **Security ->Responsibility->Define** window.
4. Search for System Administrator Responsibility. Check the Request Group section. Note down the Request Group name and Application (eg, System Administrator Reports, Application Object Library).
5. Close this window.
6. Click **Responsibility->Request**.
7. Search for System Administrator Reports Group and add iPayment Concurrent Programs mentioned as IBY SCHEDULER. Now when you go to Submit a Request you will see these concurrent programs in the list.

Scheduling Concurrent Programs

When you are scheduling a Scheduler concurrent request, you will be prompted in **Step 5** below to enter the value for the URL that will be used by SchedInitiator to initiate iPayment Scheduler. This value is configured in Section Configuring the Scheduler Servlet and looks like: http://<Apache listener's host and domain>:<port number>/servlet/scheduler.

Use this procedure to schedule concurrent requests.

Steps

1. Log on to Self Service Applications.
2. Switch the responsibility to System Administrator.
3. Click **Concurrent** -->**Requests.**

4. Click **View.** Find Requests window appear**s.** Click **Submit a New Request** button.
5. Select the name of the concurrent program that you want to submit.
6. If a schedule is already setup, select the appropriate schedule or create your own schedule based on the information described above.
7. To create a schedule, click the **Schedule** button.
8. Enter information in the mandatory fields.
9. Click **Save** to save the schedule.
10. Click **Submit** to submit the concurrent request.

Setting up iPayment User Interface

To set up iPayment user interface, See the latest *Oracle iPayment Concepts and Procedures.*

3

Implementing APIs

Topics include:

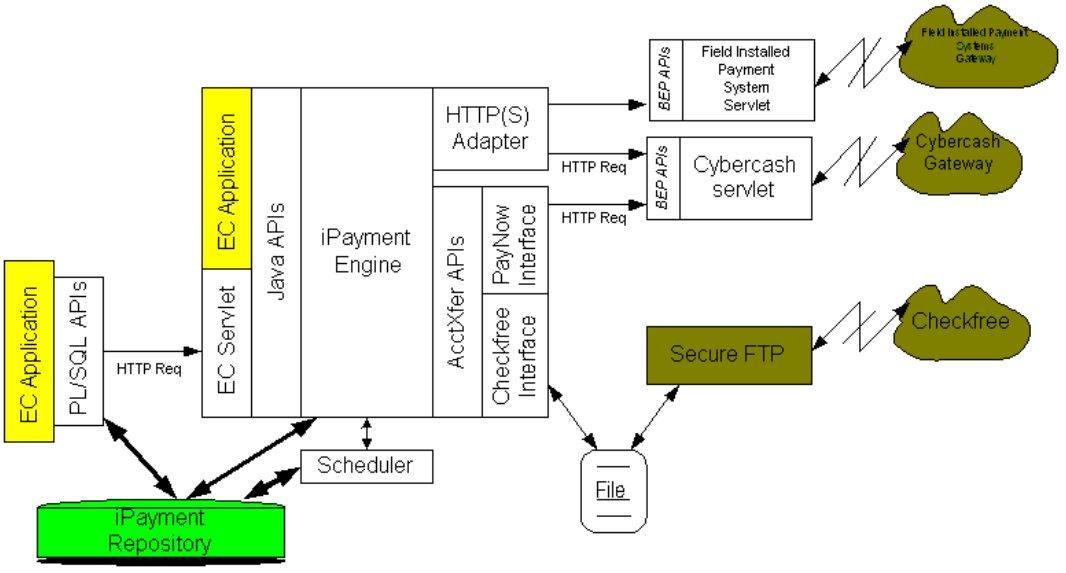
- Overview of iPayment APIs
- Implementing Electronic Commerce Applications APIs
- Overview of Payment System APIs
- Implementing Payment Systems APIs
- Setting Up SSL Security

Overview of iPayment APIs

iPayment provides two sets of APIs which can be implemented.

- Electronic Commerce APIs: these APIs are mainly used for payment processing.
- Payment System APIs: these APIs allow connection to the back end payment systems.

Figure 3–1 iPayment Architecture



Implementing Electronic Commerce Applications APIs

iPayment provides various types of APIs to integrate electronic commerce applications with iPayment.

Electronic commerce applications can embed the iPayment functionality within their application. This eliminates the need to access iPayment as a stand-alone application and hence improves performance and simplifies setup.

This section describes the various APIs that are provided to electronic commerce applications for using the features of iPayment. The APIs have been categorized into the following categories:

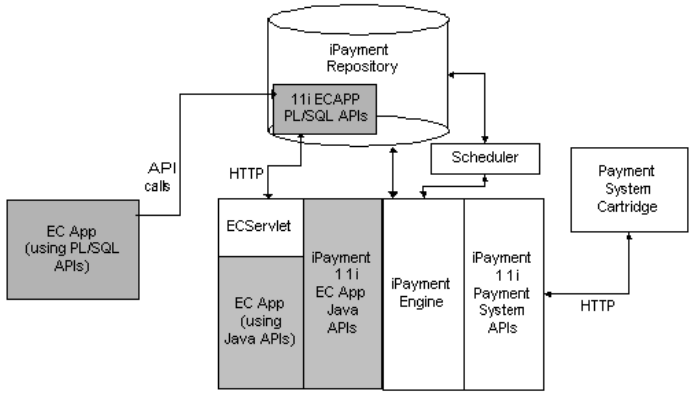
- Payment Instrument APIs
- Payment Processing APIs
- Risk Management APIs
- Credit Card Validation APIs
- Status Update API

iPayment provides APIs in the following programming languages:

- Java APIs for Electronic Commerce Application
- PL/SQL APIs for Electronic Commerce Applications

The following diagram shows the integration of APIs with iPayment.

Figure 3–2 iPayment integrating with APIs



Payment Instrument APIs

Payment Instrument APIs provide the functionality to register a payor's bank, credit card, or purchase card.

OraInstrAdd

This API is provided to register a user's bank, credit card, or purchase card account information with iPayment. iPayment generates a PmtInstId if this registration is successful. This identifier is used for payment transactions or for deleting, modifying, or inquiring about this account. Instrument number (credit card number, purchase card number, or bank account number) and payor identifier together have to be unique.

OraInstrMod

This API is provided to modify registered payment instrument account information with iPayment.

OraInstrDel

This API is provided to delete registered payment instrument account information.

OraInstrInq

There are two inquiry APIs. One queries instrument information for a single given instrument. The other queries all registered payment instruments for a given payor. The result may contain a mix of credit cards, purchase cards, or bank accounts.

Payment Processing APIs

These APIs are the transactional APIs that support various payment operations. The electronic commerce applications use these APIs to process various transaction types. For example, authorization of credit cards and purchase cards, transfer of funds from one bank account to another, capture, cancel, return, and others. A list of such APIs are provided below.

OraPmtReq

When an electronic commerce application is ready to invoke a payment request (possibly due to a user action), it calls this API. If the operation is successful, a transaction identifier is generated by iPayment and is returned as part of the result. This transaction identifier can be used later by the electronic commerce application to initiate any other operation on a payment. For example, to modify a payment or capture a payment, the electronic commerce application sends this identifier with other information that is needed to perform the operation requested.

Note: This API supports authorization and authorization with capture for credit card and purchase card payments.

If a payment is either a credit card payment or a purchase card payment, and the request is online, iPayment can perform risk analysis with the payment request (Authorization).

To enable risk analysis with authorization, either setup the payment request with risk flag set to true in one of its input objects (Refer to Java Documentation for details) or check the Enabled radio button in the Risk Management Status screen for that payee. If any of these two conditions are satisfied, the electronic commerce application will check the Riskresp object that is returned as part of the payment response object to the Payment Request API. Electronic commerce applications can also invoke the Payment Request API to evaluate a specific formula by passing the PaymentRiskInfo object.

This API is also used after a voice authorization is done to enable iPayment to handle follow-on operations. To use it for a voice authorization, set up the payment request's input objects with the Voice Authorization flag set to true and the Authorization Code variable set to the authorization code issued by the financial institution. (See *iPayment Java Documentation* for details).

OraPmtCanc

A scheduled payment can be canceled by an electronic commerce application using this API.

OraPmtQryTrxn

This API provides interface for inquiring the status or history of a payment to electronic commerce application. If a payment has been scheduled and the payment system supports an inquiry operation, the latest status is obtained from the payment system. Otherwise it sends the latest status of the payment as it is in iPayment. History of a payment can also be obtained.

OraPmtCapture

When a credit card o purchase card is used as part of a payment request and only an authorization is requested, the electronic commerce application has to capture the payment at a later time. The following APIs allow the electronic commerce application to capture all such payments.

OraPmtReturn

This API is used for credit card and purchase card specific operations. It allows processing returns from the payor.

OraPmtInq

This API retrieves the payment related information that was sent at the time of a payment request (OraPmtReq API). This information includes payment instrument, payee, tangible id (bill or order), and payor. If the electronic commerce application does not store the payment information, then this is a useful API to support modification of payment requests. It can retrieve the payment information and display it to the end user for modification.

OraPmtVoid

This API allows electronic commerce application to void operations submitted earlier. OraPmtVoid API is supported only to void certain credit card and purchase card operations. iPayment supports both online and offline OraPmtVoid API calls.

OraPmtCredit

This API provides a credit operation. Electronic commerce applications can use this API to give stand-alone credit to the customer. If the operation is successful, a transaction identifier is generated by iPayment. This Identifier is used later to

initiate any other operation on the payment. For example, to cancel the credit, electronic commerce application sends this identifier with other information that is needed to perform the cancellation.

OraPmtCloseBatch

The Close Batch API allows a payee or an electronic commerce application to close a batch of previously performed credit card or purchase card transactions. The transaction types that are included in a batch are: capture, return, and credit. This operation is mandatory for a terminal-based merchant. A host-based merchant may not have to explicitly close the batch because the batch is generally closed at predetermined intervals automatically by the processor. An electronic commerce application has to get this information from its merchant's acquirer.

OraPmtQueryBatch

This API provides an interface to the electronic commerce application to query the status of an existing batch and a closed batch.

Risk Management APIs

These APIs allow electronic commerce applications to do risk analysis independently. These APIs together can evaluate any risk formula that is configured for a payee.

A risk formula can contain any number of risk factors with different weights associated with them. When Risk API 1 is called, it evaluates all the factors configured in the formula except the AVS Code risk factor. If a risk formula has an AVS Code risk factor, then, Risk API 1, in the response object, indicates that the formula has an AVS Code risk factor. This allows electronic commerce applications to completely or partially check the risk formula and decide whether to perform an authorization or not.

If the response of the first Risk API 1 indicates that the payment is not risky, then electronic commerce application can perform the authorization and complete the rest of the evaluation by calling Risk API 2.

Electronic commerce applications can call Risk API 2 by passing the same payee id, the formula name, and the AVS code that was returned during the authorization response and the risk score that was returned as part of the response in Risk API 1. The response object of Risk API 2 contains the finally evaluated risk score.

Risk API 1

This API evaluates the risk formula associated with the payee id passed as part of the input object, PmtRiskInfo. This API can evaluate a specific formula or the implicit formula depending on the input object. After evaluation, this API constructs the response object indicating if the AVS Code risk factor is a part of the formula or not by setting the flag, AVSCodeFlag. If this flag is set to true, then electronic commerce applications need to call the Risk API 2 to complete the risk evaluation of the formula.

Risk API 2

This API needs to be called when the AVSCodeFlag in RiskAPI 1 response object indicates that the formula contains AVS Code factor. When this API is called, it only evaluates the AVS code factor. The input object of this API contains the same payee id and the formula name that was passed in Risk API 1 and the AVS Code that was returned by the payment system for the payment request. The response object that this API returns, contains the final risk score of the formula.

Credit Card Validation APIs

The Credit Card Validation APIs provide methods for determining the credit card type of a credit card number and for doing basic authentication. Since most credit card types specify the number of digits and a prefix for all valid credit card accounts in their company name, it is possible to determine the credit card types of most credit card numbers. Also, since the digits of most credit card types must (using a special algorithm) be evenly divisible by 10, it is possible to determine if a credit card number is valid or not. These APIs do not perform some of the more advanced credit card verification techniques available to back-end payment systems, such as billing address verification. These APIs allow many common errors to be caught, such as wrongly typed or truncated credit card digits. By allowing common errors to be caught by the electronic commerce application, performance is improved, since the cost of calling these APIs is much less than sending a request to the back end payment system.

The Credit Card Validation APIs are created as part of the `IBY_CC_VALIDATE` package and this package is installed in the APPS schema.

Main Methods of Credit Card Validation APIs

The Credit Card Validation APIs consist of three main methods.

1. Method `StripCC` is used to format a raw credit card number input by the customer. `StripCC` removes common filler characters such as hyphens and

spaces until it produces a credit card number consisting only of digits. StripCC must be called before the credit card number is passed to the other methods.

2. Method GetCCType returns the credit card type of a credit card number, where each credit card type, including values for invalid and unknown types is a constant in the package.

3. Method ValidateCC, which takes both a credit card number and date. It returns a boolean value indicating whether the credit card can still be used or not.

> **Note:** The IN parameters p_api_version and p_init_msg_list and the OUT parameters x_msg_count and x_msg_data are ignored. If an unexpected error occurs, x_return_status will be set to FND_API.G_RET_STS_UNEXP_ERROR. This will happen if the credit card number has invalid characters in it.

```
DECLARE
-- each character specifies a possible filler characters in the credit
-- card number; i.e. a character that can safely be stripped away
p_fill_chars VARCHAR(3) := '* -#';
p_cc_number VARCHAR(20) := '4111*1111 1111-1111#';
p_api_version NUMBER := 1.0;
p_init_msg_list VARCHAR2(2000) := ' ';
x_return_status VARCHAR2(2000);
x_msg_count NUMBER;
x_msg_data VARCHAR2(2000);
-- will hold the credit card number stripped of all characters except
-- digits; credit card numbers must be of this form for the GetCCType
-- and ValidateCC methods
v_clean_cc VARCHAR(20);
-- variable to be set by GetCCType method
v_cc_type IBY_CC_VALIDATE.CCType;
-- variable set by ValidateCC method; indicates if the credit card is
-- still usable
v_cc_valid BOOLEAN;

-- credit card expr date; rolled to the end of the month
-- by the ValidateCC method
v_expr_date DATE := SYSDATE();
BEGIN
-- the credit card number must first be stripped of all non-digits!!
IBY_CC_VALIDATE.StripCC( p_api_version, p_init_msg_list, p_cc_number,
```

```
p_fill_chars, x_return_status, x_msg_count, x_msg_data,
v_clean_cc );
-- check that illegal characters were not found
IF x_return_status != FND_API.G_RET_STS_UNEXP_ERROR THEN
  IBY_CC_VALIDATE.GetCCType( p_api_version, p_init_msg_list, v_clean_cc,
x_return_status, x_msg_count, x_msg_data, v_cc_type);
 IF x_return_status != FND_API.G_RET_STS_UNEXP_ERROR THEN
   IF v_cc_type=IBY_CC_VALIDATE.c_InvalidCC THEN
DBMS_OUTPUT.PUT_LINE('Credit card number not a valid one.');
   ELSE
DBMS_OUTPUT.PUT_LINE('Credit card number OK.');
   END IF;
   IBY_CC_VALIDATE.ValidateCC( p_api_version, p_init_msg_list, v_clean_cc,
v_expr_date, x_return_status, x_msg_count, x_msg_data, v_cc_valid);
   IF v_cc_valid THEN
DBMS_OUTPUT.PUT_LINE('Credit card is valid.');
   ELSE
DBMS_OUTPUT.PUT_LINE('Credit card number invalid or has expired.');
   END IF;
END IF;
END;
```

Note: An overloaded version of the StripCC method exists. It takes all the same arguments as the version used above except `p_fill_chars`. It gets its filler characters from the package constant `c_FillerChars`, which allows spaces and hyphens to be interspersed within the credit card number.

Status Update API

iPayment has defined a PL/SQL API that must be implemented by electronic commerce applications when offline payment processing is performed. This API allows the electronic commerce application to receive a status update. This API must be defined in a package. The naming convention of the package and signature of the API are defined below. Electronic commerce applications must implement the package according to the syntax defined and create the package in the APPS schema if they have offline payments.

The package name has to be of the format <application_short_name>_ecapp_pkg. The application_short_name is a three-letter short name that was given in electronic commerce application registration. The package should have defined update_status procedure with the following signature:

```
PROCEDURE UPDATE_STATUS(
totalRows                  IN        NUMBER,
txn_id_Tab                 IN        APPS.JTF_VARCHAR2_TABLE_100,
req_type_Tab               IN        APPS.JTF_VARCHAR2_TABLE_100,
Status_Tab                 IN        APPS.JTF_NUMBER_TABLE,
updatedt_Tab               IN        APPS.JTF_DATE_TABLE,
refcode_Tab                IN        APPS.JTF_VARCHAR2_TABLE_100,
o_status                       OUT    VARCHAR2,
o_errcode                  OUT    VARCHAR2,
o_errmsg                   OUT    VARCHAR2,
o_statusindiv_Tab IN OUT APPS.JTF_VARCHAR2_TABLE_100);
```

The following list describes the field names in the above signature:

1. **totalRows**: total number of rows being passed for the update.
2. **txn_id_Tab:** table of transaction identifiers for which the update is sent.
3. **req_type_Tab:** table of request types corresponding to the Transaction Identifier. For each transaction, there might be a req_type associated with it and the electronic commerce application has to update the correct transaction, based on txn_id and req_type. The reason for having a req-type is to uniquely identify the transaction. For the same transaction identifiers, there can be multiple transactions. E.g. Authorization and Capture. Electronic commerce application can uniquely identify the transaction based on the values in trxnid and req_type.

   The various kinds of req_type are listed in the following table.

Table 3–1 Request Types and their Descriptions

req_type	Description
ORAPMTCAPTURE	Capture transaction
ORAPMTCREDIT	Credit transaction
ORAPMTREQ	Authorize transaction
ORAPMTRETURN	Return transaction
ORAPMTVOID	Void transaction

4. **Status_Tab:** table of statuses corresponding to each transaction.

   The various values and their statuses are listed in the following table.

Table 3–2 Values and their Status

Value	Status
0	Paid
5	Payment failed
13	Scheduled
15	Failed
17	Unpaid
18	Submitted

5. **updatedt_Tab:** table for the last update date for each transaction.
6. **refcode_Tab:** table for the reference code for each transaction.
7. **o_status:** the overall status of the procedure. If there are errors in trying to execute the procedure, electronic commerce application should set up an appropriate value in this field.
8. **o_errcode:** the error code for any errors which might have occurred during processing.
9. **o_errmsg:** the error message for the error.
10. **o_statusindiv_Tab:** table of status values which have been updated. If the status value has been updated by the electronic commerce application for a particular transaction, it should set the value to TRUE for that transaction, otherwise, it should set the value to FALSE.

> **Note:** In the above procedure, for each transaction there will be an entry in the table parameters. If there were ten transactions of this electronic commerce application, whose status has changed, there will be ten entries in each table parameters.

When Does the Scheduler Invoke the API?

The Scheduler picks up all the offline payment transactions to be scheduled every time it is run. After all the offline payment transactions are processed either successfully or unsuccessfully, the Scheduler has to update the status changes, if any, of each transaction, to the appropriate electronic commerce application. To update the electronic commerce application, the Scheduler calls the PL/SQL API, which is implemented by that electronic commerce application.

Pseudo Code for Implementing the PL/SQL API by Electronic Commerce Application

For each row update, the status is based on the request type and the transaction identifier. If the update is successful, then set up the status value appropriately.

```
for i in 1..totalRows
;update the tables with status,  updatedate, and refinfo information
update tables using status_Tab[i],  updatedt_Tab[i], refCode_Tab[i] for
   the transaction with id txn_id_Tab[i] and req_type_tab[i]
if update is successful
    o_statusindiv_Tab[i] := 'TRUE'
else
    o_statusindiv_Tab[i] := 'FALSE'
end for;
return
```

Java APIs for Electronic Commerce Application

All administration and payment processing functionality are provided via the Java **PaymentService** interface. The following information describes how to access and use Java APIs. Refer to iPayment JavaDoc for more details.

> **Note:** Guest user properties need to be setup in the database before any operation can be performed. Please refer to the Setup Document provided by CRM Foundation for more details.

Obtaining /Releasing the Payment Service Handle

The **OraPmt** class offers convenient ways to obtain Payment Service handle (**PaymentService**) for the user. The application can call various APIs using this handle.

- To obtain the payment service handle, use the following method:

  ```
  static public PaymentService init() throws PSException
  ```

  This API provides Payment Service handle to the user and takes care of all the necessary session initialization steps.

- To release a Payment Service handle with the session, use the following method:

```
static public void end() throws PSException
```

Sample code

The following code gives an example of how these APIs are used.

```
public static void main(String[] args) {
try {
     PaymentService paymentService =  OraPmt.init();
     // now you can call all kinds of APIs
     //PSResult result = paymentService.OraPmtReq(...);

} catch (PSException pe) {
     // exception handling
     System.out.println("Error code is: " + pe.getCode());
     System.out.println("Error message is: " + pe.getMessage());
}

finally {
              try {
                    OraPmt.end();
              } catch (PSException pe) {
                    // exception handling
                    System.out.println("Error code is: " + pe.getCode());
                    System.out.println("Error message is: " +
                                          pe.getMessage());
              }
            }
}
```

Checking Returned Result from Payment Service API

PSResult is the returned object of all PaymentService APIs. To obtain the status of the operation, use the following API:

```
public String getStatus();
```

This API returns one of the following constants:

```
PSResult.IBY_SUCCESS// action succeeded
PSResult.IBY_WARNING// action succeeded with warning
PSResult.IBY_INFO// not yet in use
PSResult.IBY_FAILURE// action failed
```

If SUCCESS or WARNING is invoked, a result object can always be obtained by using the following API:

```
public Object getResult();
```

If FAILURE is invoked, a result object may be returned for payment operation APIs, if this failure occurred with back end payment system.

The actual object returned varies with each API. It could be an integer or one of the payment response objects. You need to clearly cast it. For a list of castings, refer to the iPayment Java Documentation for the PaymentService interface.

If WARNING or FAILURE is invoked, a warning or error message is returned. Use the following two APIs to retrieve error codes and error messages.

```
public String getCode();// get the error code 'IBY_XXXXXX'
public String getMessage(); // get the error message text
```

The following sample code illustrates the behavior of PSResult object.

```
public Object checkResult(PSResult pr) {
     String status = pr.getStatus();
     if (status.equals(PSResult.IBY_FAILURE)) {
         // in case of failure, only error message is expected
         System.out.println("error code is : " + pr.getCode());
         System.out.println("error message is : " + pr.getMessage());
         Object res=pr.getResult();
         if (res!=null) System.out.printIn ("failure occured with backend
Payment system");
         return res;
   }

   if (status.equals(PSResult.IBY_SUCCESS)) {
      // in case of success, only result object is expected
      Object res = pr.getResult();
      return res;  // you need cast this to specific object
      // based on the APIs you called
  }

   if (status.equals(PSResult.IBY_WARNING)) {
       // in case of warning, both result object and message are
       // expected
       // warning is returned only for Payment APIs in case of
       // offline scheduling
       System.out.println("warning code is : " + pr.getCode());
       System.out.println("warning message is : " + pr.getMessage());
       Object res = pr.getResult();
       return res; // you need cast it here too
   }
```

```
   // currently IBY_INFO is not yet returned by any PaymentService API
   System.out.println("Illegal status VALUE in PSResult! " +
  pr.getStatus());
   return null;
}
```

Using Payment Service API

After a payment service handle is obtained via the **OraPmt** class, you can call any of the following APIs in Payment Service interface. For details, refer to JavaDoc.

Here is some sample code for Payment Instrument API, and Payment Processing APIs. These codes use the checkResult call.

Registering a Credit Card

```
public void instrAPISample(PaymentService paymentService,
                           int ecappId)    {
     PSResult pr;
     Object obj;
     CreditCard cc;
     Address addr;
     int instrid_cc;
     String payerid = "payer1";

     addr = new Address("Line1", "Line2", "Line3", "Redwood Shores",
                        "San Mateo", "CA", "US", "94065");

     // credit card
     cc = new CreditCard();
     cc.setName("My Credit Card");
     cc.setFIName("CitiBank");
     cc.setInstrBuf("This is my credit card description.");
     cc.setInstrNum("4111111111111111"); // the credit card number
     cc.setCardType(Constants.CCTYPE_VISA); // the credit card type, should
     // match the credit card number, if set
     cc.setExpDate(new java.sql.Date(101, 0, 10)); // Jan 10, 2001
     cc.setHolderName("Mary Smith");
     cc.setHolderAddress(addr);

     // add the credit card
     pr = paymentService.oraInstrAdd(ecappId, payerid, cc);
     obj = checkResult(pr);
     if (obj ==  null) return; // registration failure
     instrid_cc = ((Integer) obj).intValue();
```

```
     System.out.println("Credit card registered successfully " +
                        "with instrument id " + instrid_cc);
}
```

Sending a Credit Card Authorization Request

```
// perform an ONLINE credit card authorization with payment service
public void paymentAPISample(PaymentService paymentService, int ecAppId) {
     Bill t;
     CoreCreditCardReq reqTrxn;
     CreditCard cc;
     PSResult pr;
     CoreCreditCardAuthResp resp;

     // set up the tangible object
     t = new Bill();
     t.setId("orderId1");
     t.setAmount(new Double(21.00));
     t.setCurrency("USD");
     t.setRefInfo("refInfo");
     t.setMemo("memo");
     t.setUserAccount("userAcct");

     // set up the transaction object
     reqTrxn = new CoreCreditCardReq();
     reqTrxn.setNLSLang("American_America.US7ASCII");
     reqTrxn.setMode(Transaction.ONLINE);
     reqTrxn.setSchedDate(new java.sql.Date(100, 5, 10)); //June 10, 2000
     reqTrxn.setAuthType(Constants.AUTHTYPE_AUTHONLY);

     // set up the payment instrument
     cc = new CreditCard();
     cc.setId(100);  // assuming we have previously registered credit
                    // card with instrument id 100

     pr = // assuming payee1 has already been configured with the payment
          // service
          paymentService.oraPmtReq(ecAppId, "payee1", "", cc, t,
         reqTrxn);

     resp = (CoreCreditCardAuthResp) checkResult(pr);
     if (resp == null) return;
     System.out.println("Request finished with transaction id: " +
```

```
            resp.getTID());

        }
```

Registering a Purchase Card

```
public void instrAPISample(PaymentService paymentService,
                           int ecappId)    {
  PSResult pr;
  Object obj;
  PurchaseCard pc;
  Address addr;
  int instrid_pc;
  String payerid = "payer1";

  addr = new Address("Line1", "Line2", "Line3",
                     "Redwood Shores", "San Mateo", "CA",
                     "US", "94065");

  // purchase card
  pc = new PurchaseCard();
  pc.setName("My Purchase Card");
  pc.setFIName("CitiBank");
  pc.setInstrBuf("This is my purchase card description.");
  pc.setInstrNum("4111111111111111"); // the purchase card
                                      // number
  pc.setCardType("Constants.CCTYPE_VISA"); // the purchase
  // card type, should match the purchase card number, if
  // set
  pc.setCardSubtype("P");
  pc.setExpDate(new java.sql.Date(101, 0, 10));
                              // Jan 10, 2001
  pc.setHolderName("Mary Smith");
  pc.setHolderAddress(addr);

  // add the purchase card
  pr = paymentService.oraInstrAdd(ecappId, payerid, pc);
  obj = checkResult(pr);
  if (obj == null) return; // registration failure
  instrid_pc = ((Integer) obj).intValue();

  System.out.println("Purchase Card registered " +
                     "successfully with instrument id " +
                     instrid_pc);
}
```

Sending a Purchase Card Authorization Request

```
// perform an ONLINE purchase card authorization with
          // payment service
          public void paymentAPISample(PaymentService paymentService,
                                       int ecAppId)   {
            Bill t;
            PurchaseCardReq reqTrxn;
            PurchaseCard pc;
            PSResult pr;
            CoreCreditCardAuthResp resp; // since purchase card
            // authorization responses are identical to credit card
            // responses. See javadoc for details.

            // set up the tangible object
            t = new Bill();
            t.setId("orderId1");
            t.setAmount(new Double(21.00));
            t.setCurrency("USD");
            t.setRefInfo("refInfo");
            t.setMemo("memo");
            t.setUserAccount("userAcct");

            // set up the transaction object
            reqTrxn = new PurchaseCardReq();
            reqTrxn.setNLSLang("American_America.US7ASCII");
            reqTrxn.setMode(Transaction.ONLINE);
            reqTrxn.setSchedDate(new java.sql.Date(100, 5, 10));
                                              // June 10, 2000
            reqTrxn.setAuthType(Constants.AUTHTYPE_AUTHONLY);
            reqTrxn.setPONum("PONum");
            reqTrxn.setTaxAmount("1.50");
            reqTrxn.setShipToZip("94065");
            reqTrxn.setShipFromZip("94404");

            // set up the payment instrument
            pc = new PurchaseCard();
            pc.setId(100); // assuming we have previously registered
                           // purchase card with instrument id 100

            pr = // assuming payee1 has already been configured with
                 // the payment service
                 paymentService.oraPmtReq(ecAppId, "payee1", "", pc,
                                          t, reqTrxn);

            resp = (CoreCreditCardAuthResp) checkResult(pr);
```

```
    if (resp == null) return;
    System.out.println("Request finished with " +
                       "transaction id: " + resp.getTID());
  }
```

PL/SQL APIs for Electronic Commerce Applications

iPayment provides PL/SQL APIs to those electronic commerce applications that require or prefer PL/SQL interfaces for processing payment operations. There is an additional HTTP call when PL/SQL APIs are called. When electronic commerce applications invoke these PL/SQL APIs, the APIs in return call the electronic commerce servlet through HTTP.

iPayment PL/SQL APIs provide all payment related processing and two Risk APIs. The functionality of these APIs is the same as the Java APIs. iPayment does not provide Payment Instrument APIs in PL/SQL.

PL/SQL APIs are created as part of IBY_PAYMENT_ADAPTER_PUB package and these packages are installed in the APPS schema.

Requirements

1. PL/SQL Package **IBY_PAYMENT_ADAPTER_PUB** must be installed in the APPS schema.
2. An administrator must set up iPayment URL property to iPayment electronic commerce servlet's URL using the iPayment administration user interface before invoking the APIs.

The following PL/SQL code helps you to understand how iPayment PL/SQL APIs can be invoked. This example code invokes the Payment Request API using a credit card. It also passes risk related information for risk evaluation.

```
DECLARE
   p_api_version      NUMBER := 1.0;

   --To initialize message list.
   p_init_msg_list VARCHAR2(2000)  := FND_API.G_TRUE;
   p_commit               VARCHAR2(2000)  := FND_API.G_FALSE;
   p_validation_level   NUMBER  := FND_API.G_VALID_LEVEL_FULL;
   p_ecapp_id             NUMBER := 0;
   p_payee_rec           IBY_PAYMENT_ADAPTER_PUB.Payee_rec_type;
   p_payer_rec           IBY_PAYMENT_ADAPTER_PUB.Payer_rec_type;
   p_pmtinstr_rec   IBY_PAYMENT_ADAPTER_PUB.PmtInstr_rec_type;
   p_tangible_rec        IBY_PAYMENT_ADAPTER_PUB.Tangible_rec_type;
   p_pmtreqtrxn_rec   IBY_PAYMENT_ADAPTER_PUB.PmtReqTrxn_rec_type;
```

```
   p_riskinfo_rec        IBY_PAYMENT_ADAPTER_PUB.RiskInfo_rec_type;
   x_return_status      VARCHAR2(2000);
                                      -- output/return status
   x_msg_count         NUMBER;
                                      -- output message count
   x_msg_data           VARCHAR2(2000);
                                     -- reference string for getting output
message text
   x_reqresp_rec       IBY_PAYMENT_ADAPTER_PUB.ReqResp_rec_type;
                                     -- request specific output response
object
   l_msg_count         NUMBER;
   l_msg_data           VARCHAR2(2000);

BEGIN
  p_ecapp_id := 66;        -- iPayment generated ECAppID
  p_payee_rec.Payee_ID := 'ipay-payee1';    -- payee's ID
  p_payer_rec.Payer_ID   := 'ipay-cust1';      -- payer's ID
  p_payer_rec.Payer_Name  := 'Cust1';         -- Payer's (Customer's name)
  p_pmtreqtrxn_rec.PmtMode := 'ONLINE';
                                                    -- Payment mode (Can be
ONLINE/OFFLINE)
  p_tangible_rec.Tangible_ID  := 'tangible_id1';  -- Tangible ID / order ID
  p_tangible_rec.Tangible_Amount := 25.50; -- Amount for the transaction
  p_tangible_rec.Currency_code := 'USD';   -- Currency for the transaction
  p_tangible_rec.RefInfo := 'test_refinfo3';
  p_pmtreqtrxn_rec.Auth_Type := upper('authonly');    -- request type
  p_pmtinstr_rec.CreditCardInstr.CC_Type := 'Visa';
                                                                          --
payment instrument type
  p_pmtinstr_rec.CreditCardInstr.CC_Num := '4111111111111111';
                                                                        --
payment instrument number
  p_pmtinstr_rec.CreditCardInstr.CC_ExpDate := to_char(sysdate+300);
                                                                        --
payment instr. Expiration date

 --5. RISK INPUTS
  p_riskinfo_rec.Formula_Name := 'test3';     -- Risk formula name
  p_riskinfo_rec.ShipToBillTo_Flag := 'TRUE';
                               -- Flag showing if ship to address same as Bill
to address
  p_riskinfo_rec.Time_Of_Purchase := '08:45';
                               -- Time of purchase
```

```
   IBY_PAYMENT_ADAPTER_PUB.OraPmtReq
 ( p_api_version,
p_init_msg_list,
p_commit,
p_validation_level,
               p_ecapp_id ,
               p_payee_rec,
               p_payer_rec,
               p_pmtinstr_rec,
               p_tangible_rec,
               p_pmtreqtrxn_rec,
               p_riskinfo_rec ,
               x_return_status,
               x_msg_count ,
               x_msg_data  ,
               x_reqresp_rec);
 END;
 Payment Request Related Response. Printing Only If Status Is Success
   If(Char(X_Reqresp_Rec.Response.Status = 'S') Then

          -- Offline Mode Related Response
         If P_Pmtreqtrxn_Rec.Pmtmode = 'OFFLINE' Then
            Dbms_Output.Put_Line('Transaction ID = ' || To_Char(X_Reqresp_
 Rec.Trxn_ID));
            Dbms_Output.Put_Line (' X_Reqresp_
 Rec.Offlineresp.Earliestsettlement_Date = ' ||
                                          To_Char(X_Reqresp_
 Rec.Offlineresp.Earliestsettlement_Date));
            Dbms_Output.Put_Line('X_Reqresp_Rec.Offlineresp.Scheduled_Date = '
 ||
 To_Char(X_Reqresp_Rec.Offlineresp.Scheduled_Date));
         Else
            Dbms_Output.Put_Line('Transaction ID = ' || To_Char(X_Reqresp_
 Rec.Trxn_ID));
            Dbms_Output.Put_Line('X_Reqresp_Rec.Authcode = ' || X_Reqresp_
 Rec.Authcode);
            Dbms_Output.Put_Line('X_Reqresp_Rec.Avscode = ' || X_Reqresp_
 Rec.Avscode);
            Dbms_Output.Put_Line('-----------------------------------------');
            -- Risk Related Response
            If(X_Reqresp_Rec.Riskrespincluded = 'YES') Then
                  Dbms_Output.Put_
 Line('-----------------------------------------');
               Dbms_Output.Put_Line(' X_Reqresp_Rec.Riskresponse.Risk_Score=
 '|| X_Reqresp_Rec.Riskresponse.Risk_Score );
```

```
                Dbms_Output.Put_Line('X_Reqresp_Rec.Riskresponse.Risk_
Threshold_Val=   '||
                                                        X_Reqresp_
Rec.Riskresponse.Risk_Threshold_Val);
            Endif;
        Endif;
  End If;
```

Overview of Payment System APIs

iPayment provides a complete payment solution. Payment System APIs allow integration with third party payment systems for credit card, purchase card, and bank account transfer processing. The payment systems communicate with the payment processors and the acquirers/banks to process payment transactions.

There are three options for integrating with third party payment systems, also known as back end payment systems.

- Use the payment system integration provided by iPayment. iPayment provides payment integration with CyberCash and CheckFree.
- Use payment integration provided by the vendor. Many payment system vendors have partnered with Oracle to build integration with iPayment. These field installable servlets are available from Oracle's payment system partners.
- Build integration by using published Payment System APIs for credit cards and purchase cards. See Back-End Processing APIs for instructions on how to build your own field installable servlets.

Configuring CyberCash

See Configuring iPayment CyberCash Servlet.

Implementing CheckFree

iPayment is integrated with Checkfree to provide account transfer functionality. Checkfree's Direct Payment Model is provided by Checkfree for account transfer. iPayment is integrated with this model.

How the Direct Payment Model Works

- Checkfree has defined a set of file formats for the Direct Payment Model.
- iPayment and Checkfree generate files complying to these formats.

- The generated files are transmitted between iPayment and Checkfree via a secured mechanism suggested by Checkfree. From all the available file formats, only three file formats are used in iPayment integration. The file formats are:
  - Debit Order file
  - Transaction Journal file
  - Return file

For more information about these files, see Checkfree's Direct Payment Model File Specifications documentation.

Processing Payments for a Payee using Checkfree

1. A payee must have an external setup with Checkfree to use the Direct Payment Model.
2. A payee must be configured in iPayment with the information that Checkfree provides during the setup. For a detailed description about the configuration process, see Configuring a Payee for Checkfree.
3. After configuration, iPayment can start accepting bank account transfer payments for that payee. These payments can be routed to Checkfree.

Payment Process Flow

1. The Scheduler works at regular intervals and picks up all pending payments for Checkfree.
2. The Scheduler writes all those requests to a Debit Order file conforming to the specifications of the Direct Payment Model. The name and directory location of this file are configured through the configfile.
3. The Scheduler creates one file for each payee and each file is in a different directory. Location of the file depends on the payee configuration in Checkfree.
4. All Debit Order files generated by the Scheduler get transmitted to Checkfree gateway using a process suggested by Checkfree. Refer to Checkfree Implementation Guide for more information.
5. Checkfree sends a Confirmation Output file and a Transaction Journal file in response to the Debit Order file. iPayment only processes Transaction Journal file.
6. Confirmation Output file shows if the Debit Order file has a proper syntax or not and the Transaction Journal file contains responses for all the accepted payment requests that were submitted in the Debit Order file. iPayment does

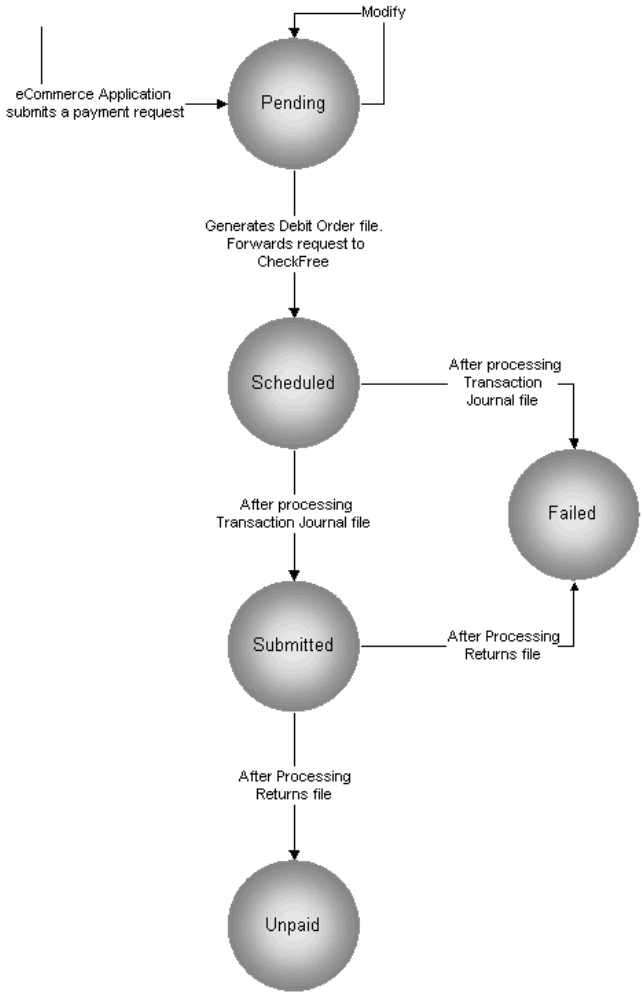
not process the Confirmation Output file to verify if there were any errors or not. You should monitor the Confirmation Output file to detect any syntax errors in the Debit Order file.

7. Checkfree also returns, Return file if there are any exceptions during processing of the payment requests. iPayment processes Return file.

8. iPayment notifies electronic commerce applications of all status changes of the payment requests throughout the cycle.

The following diagram depicts how the payment status changes after iPayment processes different files.

Figure 3–3 Different Payment States



Installation of Checkfree

1. Integrated components are installed automatically during installation of iPayment. When iPayment is installed, the files related to iPayment and CheckFree integration are installed in the following directory: oracle/apps/iby/bep_impl/ckf.

2. The other component to be installed is the component that transfers files from iPayment to Checkfree. There are different models that Checkfree suggests to transfer files in a secure mode. A model can be selected depending on the need and should be installed before making iPayment Checkfree enabled.

Configuring a Payee for Checkfree

Use the following procedure to configure a payee for Checkfree.

Prerequisites

1. Install the File Transfer module as suggested by Checkfree.

Steps

1. Set up CheckFree as a payment system via the administration user interface.
2. Each payee that wants CheckFree as one of their back end payment processing systems must set up a configuration file in the following directory:
   $IBY_TOP/config/checkfree/payment system identifier>.
   Payment System Identifier is the key value that is entered for Checkfree in the Payee administration screens for this payee. The key value is the same as the payee short name that is given by CheckFree for this payee. A template config file (config.cfg) is provided for reference and is available in $IBY_TOP/config directory.
3. Create a directory in $IBY_TOP/config with name as the Payment System Identifier.
4. Copy the template config file to this new directory and rename the file as <BEP-Key>.cfg. For example, if BEP key is abc_key, then the template file config.cfg is copied to $IBY_TOP/config/abc_key/abc_key.cfg. This file should be edited with valid values as specified in the Guidelines on the Valid Values for the Configuration File.

Note: Ensure that $IBY_TOP is present in the CLASSPATH environment variable of the Scheduler servlet.

Guidelines on the Valid Values for the Configuration File

The following table lists the valid values for the configuration file.

Table 3–3 Valid Values for the Configuration File

Name	Description
CLIENT_ID	CheckFree implementation is custom built for merchants needs. Merchants who need CheckFree's account transfer support, have to contact CheckFree to obtain this identifier. This identifier is provided specifically for each merchant by CheckFree. Checkfree also calls this Client ID.
PAYEE_ID	The identifier provided specifically for each merchant by CheckFree.Checkfree calls this a Payee Number.
PAYEE_SHORT_NAME	Short name of the merchant.This is provided by Checkfree and is the same as Payee short name.
DIR_TO_SEND_TO_ CHECKFREE	Name of the directory in which iPayment generates all files (relating to this merchant) to be transferred to CheckFree.
TO_FILE_BASE_NAME	iPayment prepends this name while generating files (relating to this merchant) to be transferred to CheckFree.
DIR_TO_GET_FROM_ CHECKFREE	Name of the directory in which CheckFree generates all files (relating to this merchant) to be transferred to iPayment.
JOURNAL_FILE_BASE_ NAME	CheckFree prepends this name while generating journal files (relating to this merchant) to be transferred to iPayment.
RETURNS_FILE_BASE_ NAME	CheckFree prepends this name while generating returns files (relating to this merchant) to be transferred to iPayment.
MERCHANT_ ADDRESS_LINE_1	Street address for this merchant. This is only to be in the format accepted by CheckFree.
MERCHANT_CITY	City name for this merchant. This should only be in the format accepted by CheckFree.
MERCHANT_STATE	State name for this merchant. This should only be in the format accepted by CheckFree.
MERCHANT_ZIP	Zip code for this merchant. This should only be in the format accepted by CheckFree.
MERCHANT_ COUNTRY	Country name for this merchant. This should only be in the format accepted by CheckFree.

Administrative Tips

- Monitor the Confirmation Output files generated by Checkfree to check if any exceptions or errors were generated. If any errors or exceptions were generated, file a bug with Oracle Support.
- Archive the files that are generated by CheckFree and iPayment.

Implementing Payment Systems APIs

iPayment supports field-installable servlets. These are payment system servlets not bundled with iPayment. This feature allows a payee to acquire a new, additional, or upgraded payment system servlet and configure it in the same way as the payment system servlets bundled with iPayment.

The ability to add field-installable servlets provides payment flexibility and allows new releases of iPayment and the payment systems to be independent of each other. It also enables electronic commerce applications to customize the payment system for their specific needs and regions.

Field-installable payment system servlets for iPayment are usually available from Oracle's payment system partners.

Setting Up SSL Security

When iPayment communicates with payment system servlets, the information exchanged may be sensitive information such as credit card numbers. If the communication is not secure, it poses a security risk.

The security risk increases in the following circumstances:

- If iPayment and the payment systems are installed on separate machines
- If iPayment is running outside your firewall

Steps

- To set up a back-end payment system servlet with secured sockets layer follow the procedures in Apache's mod-ssl documentation (http://www.mod-ssl.org/docs). Make sure that your SSL server has a complete certificate chain to the root certificate. SSL's client toolkit requires it.
- Set up the BASE URL parameter of back-end payment system using https as the protocal.

Setting Up SSL Runtime for iPayment

iPayment requires a set of runtime libraries for supporting SSL communication. These runtime SSL libraries are included with the Oracle 8*i* distribution, but are not installed on an applications tier by default. If you are using iPayment, you must follow these steps to manually configure SSL on your web server.

Configuring SSL

1. Copy SSL runtime libraries to $JAVA_TOP.
2. Log on to your web server as the applmgr user and run the environment file for the appropriate product group.
3. Go to the $JAVA_TOP directory, create a subdirectory "ssl", and enter that subdirectory. For example:

   % cd $JAVA_TOP

   % mkdir ssl

   % cd ssl
4. Copy the following three files from any 8*i* installation to the current directory:

   $ORACLE_HOME/jlib/javax-ssl-1_1.jar

   $ORACLE_HOME/jlib/jssl-1_1.jar

   $ORACLE_HOME/lib/libnjssl8.so

   Note: $ORACLE_HOME in this case refers to your 8*i* directory, not the default Oracle Home, which is based on 8.0.6.

   Note: If you do not have an 8*i* installation on your web server, you can copy these files from your database server using the ftp command.
5. Set up runtime environment variables.

   If you are building your electronic commerce application as a servlet, you need to modify CLASSPATH and LD_LIBRARY_PATH in your servlet engine's servlet configuration.

Here is an example for modifying these variables in the Apache servlet engine (JServ) configuration file. For Apache JServ, you have to edit the jserv.properties file to set the CLASSPATH and LD_LIBRARY_PATH environment variables. To add the two SSL jar files from step 1 to the CLASSPATH, add the following lines to jserv.properties:

wrapper.classpath=$JAVA_TOP/ssl/javax-ssl-1_1.jar

wrapper.classpath=$JAVA_TOP/ssl/jssl-1_1.jar

To add the shared library from step 1 to the LD_LIBRARY_PATH, you must find the line in jserv.properties that begins with:

wrapper.env=LD_LIBRARY_PATH=

and add the following to the end of that line:

$JAVA_TOP/ssl

Note: Use a colon to separate the directory you are adding from the ones that are already present.

If there is no such LD_LIBRARY_PATH line, create one by adding the following line to jserv.properties:

wrapper.env=LD_LIBRARY_PATH=$JAVA_TOP/ssl

If you have a stand-alone application, you need to modify CLASSPATH and LD_LIBRARY_PATH. Append:$JAVA_TOP/ssl/javax-ssl-1_1.jar: $JAVA_TOP/ssl/javax-ssl-1_1.jar to CLASSPATH and append:$JAVA_TOP/ssl to LD_LIBRARY_PATH environment variable.

Note: You may not have defined $JAVA_TOP environment variable in your environment. In that case, you should include the fully qualified physical path.

A

Risk Management

Topics Include:

Utilizing Risk Management

iPayment supports risk management. Electronic commerce applications can incorporate this feature and detect fraudulent payments. The following information describes how electronic commerce applications can utilize the risk management functionality of iPayment.

Risk Factors and Risk Formulas

iPayment is bundled with a set of risk factors. Payees can configure these factors depending on their business model. The payees can create multiple formulas using different factors and weights depending on their specific requirements. The ability to create multiple formulas provides flexibility to payees to accommodate different business scenarios. Each formula must be set up so that the sum of the weights is equal to 100. If a risk factor value is missing at the time of risk evaluation, the risk for the missing factor is considered very high in the formula.

iPayment also defines an implicit formula for each payee with default factors and weights. Administrators have the flexibility to modify the implicit formula. The following information describes how and where the implicit formula is used.

Process Flow of Risk Evaluation

1. To enable risk analysis during authorization, either set up the explicit risk flag in the input transaction object or check Enabled radio button in the Risk Management Status screen for that payee.
2. When an electronic commerce application makes a Payment Request API call, iPayment first checks the risk flag and depending on its value, decides if the payee involved in the payment request is risk enabled or not. If the risk analysis field indicates that iPayment should perform risk analysis, or if a default value is added in the field and a payee is risk enabled, iPayment evaluates either the risk formula passed in the Payment Request API or the implicit formula associated with that payee.
3. Electronic commerce application can pass a specific risk formula name by calling the overloaded Payment Request API. This API takes PmtRiskInfo object in which electronic commerce application can set up the formula name and additional information. If PmtRiskInfo object is not passed and the payee is risk enabled, iPayment evaluates the implicit formula of that payee.
4. iPayment returns the Risk Response (RiskResp) object as part of the payment response. If risk evaluation is done successfully, Risk Response object contains the risk score obtained after evaluation and the threshold value that is set up with the payee. Electronic commerce application can decide whether payment can be accepted or not, based on the risk score and the threshold value.
5. If the risk score is more than the threshold value, the payment request is risky.

Process Flow of Independent Risk APIs

Risk API 1

1. When an electronic commerce application invokes Risk API 1, iPayment evaluates the risk formula sent in the request or the implicit formula associated with that payee.
2. iPayment evaluates all the risk factors that are configured as part of this formula, except the AVS Code risk factor.
3. After evaluation, iPayment returns Risk response (RiskResp) object as a response to this API. This response object contains, the status of the API call, AVSCodeFlag indicating if AVS Code risk factor was part of the formula or not, risk score, and the risk threshold value that is setup for the payee. Depending on the AVSCodeFlag value, it is be decided whether to call Risk API 2 or not.

Note: Partial risk score is returned if AVS Code risk factor is part of the risk formula.

Risk API 2

1. Electronic commerce applications need to call this API with the same PayeeID and formula name that were used to call Risk API 1. The risk score that was returned as part of the Risk API 1 response also needs to be sent. When electronic commerce applications call this API, iPayment checks again if the formula has AVS Code risk factor configured in it or not. If it is configured, iPayment evaluates the AVS Code risk factor.
2. After evaluating the AVS Code risk factor, iPayment calculates the final risk score of the formula using the previous risk score that was sent and the AVS Code risk factor score. This risk score is sent back to the electronic commerce application as part of the response object of this API.

Risk Management Test Scenarios

The following information includes three business scenarios to describe how a merchant can use the Risk Management functionality.

Merchant Selling Books and Low Priced Goods

In a small business, risky instruments risk factor is a critical risk factor. If a customer is using a stolen credit card, the merchant should consider this transaction risky and assign this risk factor a higher weight than the other risk factors. Ship to / bill to address matching and payment history are also important risk factors. To include AVS Code risk factor, a merchant can set up a formula with weights as shown in Weight B column in the Risk Formula Setup-First Case table. The total of all the weights should be 100. For a formula that a merchant would set up in this case, see Risk Formula Setup for the First Case.

Risk Formula Setup for the First Case

The following table shows the risk formula setup for a merchant selling books and low priced goods.

Table A–1 Risk Formula Setup-First Case

Factors	Weight A	Weight B
Risky Instruments	30	30

Table A–1 Risk Formula Setup-First Case

Factors	Weight A	Weight B
Payment Amount Limit	15	15
Transaction Amount	15	15
Ship to / Bill to	20	10
Payment History	20	10
AVS Code	0	20

Risk Factor Setup

- Payment Amount Limit

  The following table shows the risk levels and the associated payment amounts.

Table A–2 Risk Levels and Associated Payment Amount

Risk Levels	Greater than or Equal To
Low	0
Low medium	100
Medium	200
Medium high	300
High	400

- Transaction Amount

  A transaction is high risk if the transaction amount exceeds 500 in one week. Otherwise there is no risk.

- Payment History

  The following table shows the risk levels and the number of payments made in the last six months by a particular customer.

Table A–3 Risk Levels and the Number of Payments

Risk Levels	Greater than or Equal To
Low	6
Low medium	4
Medium	3
Medium high	2
High	0

- AVS Code

  The following table shows the risk levels and the associated AVS Codes. AVS Code risk factor evaluation is useful only for customers in the United States.

Table A–4 Risk Levels and Associated AVS Codes

Risk Level	AVS Code
No risk	S,Y,U,X,R,E
Low	A,Z,W
Low medium	
Medium	
Medium high	
High	N
No risk	S,Y,U,X,R,E

- Ship To / bill To and Risky Instruments

  These risk factors do not require any setup. The evaluation will be done with the data already existing in the database.

- Risk Score

  A typical threshold value would be between medium and medium high risk score.

  Risk Management module evaluates the payment request and returns an overall risk score. If an overall risk score exceeds the threshold value set up by

the merchant, then the merchant has to decide whether to process the request or to block the request.

Merchant Selling Electronic Goods

Risky instruments is a critical factor in this case. If a customer is using a stolen credit card, the merchant should consider this transaction risky and assign it a higher weight.

Frequency of purchase is the next important risk factor. Usually customers do not buy electronic goods frequently, and if they do, the purchases could be a fraudulent.

In this scenario, time of purchase is also to be considered as an important risk factor. If someone buys many goods after 2:00 AM, it might be a fraudulent purchase.

To include an AVS Code risk factor, a merchant sets up a formula with weights as shown in column Weight B in Risk Formula Setup-Second Case table. The total of all the weights are 100. The AVS Code risk factor evaluation will be useful only for customers in the United States.

Risk Formula Setup for the Second Case

The following table shows the risk formula set up for a merchant selling electronic goods.

Table A–5 Risk Formula Setup-Second Case

Factor	Weight A	Weight B
Risky Instruments	30	30
Ship to / Bill to	15	12
Time of Purchase	15	12
Frequency of Purchase	20	10
Payment Amount	10	8
Transaction Amount Limit	10	8
AVS Code	0	20

Risk Factor Setup

- Payment Amount Limit

  The following table shows the risk levels and the associated payment amounts.

Table A–6 Risk Levels And Associated Payment Amounts

Risk Levels	Greater Than or Equal To
Low	500
Low medium	1000
Medium	1500
Medium high	2000
High	2500

- Transaction Amount

  This risk factor is considered high risk if the amount exceeds 5,000 in one week. Otherwise there is no risk.

- Frequency of Purchase

  This risk factor is considered high risk if the frequency of purchase exceeds ten times in the previous one week.

- AVS Codes

  The following table shows the risk levels and the associated AVS codes. AVS codes risk factor evaluation is only useful for customers in the United States.

Table A–7 Risk Levels and Associated AVS Codes

Risk Level	AVS Code (Comma Separated)
No risk	S,Y,U,X,R,E
Low	A,Z,W
Low medium	
Medium	
Medium high	
High	N
No risk	S,Y,U,X,R,E

- Ship To / Bill To and Risky Instruments

  These risk factors do not require any setup. The evaluation will be done through the data already existing in the database.

- Risk Score

  A typical threshold value is to be between medium and medium high risk score.

  The risk management module evaluates the payment request and returns an overall risk score. If an overall risk score exceeds the threshold value set up by the merchant, the merchant has to decide whether to process the request or to block the request.

Business to Business Customer

In a business to business scenario, a merchant has an established relationship with his customer. In this scenario, the Oracle Receivables risk factors take higher precedence. The merchant is interested in the customer's payment history, his credit rating, etc. All Oracle Receivables risk factors are set up through Oracle Receivables interface.

Risk Formula Setup in the Third Case

The following table shows a Risk Formula setup for a business to business customer.

Table A–8 Risk Formula Setup-Third Case

Factors	Weight
Overall Credit Limit	30
Transaction Credit Limit	30
Risk Codes	15
Credit Rating Codes	15
Payment History	10

Risk Factor Setup

- Overall Credit Limit: 100,000
- Transaction Credit Limit: 50,000
- Risk Codes are set up through Oracle Receivables codes.

  The following table shows the risk codes and the associated risk scores set up through iPayment administration user interface.

Table A–9 Risk Factor Setup

Risk Codes	Risk Score
Low	Low
Average	Medium
Excellent	No risk

- Credit Rating Codes are set up through Oracle Receivables interface

  The following table shows the set up of credit rating codes and the associated risk scores.

Table A–10 Credit Rating Codes and Associated Risk Scores

Credit Rating Codes	Risk Score
Low	Low
Average	Medium
Poor	High
Excellent	No risk

- Risk Score

  A typical threshold value is between medium and medium high.

  Risk management module evaluates the payment request and returns an overall risk score. If an overall risk score exceeds the threshold value set up by the merchant, then the merchant decides whether to process the request or block it.

B

Error Handling

Error Handling During Payment Processing

iPayment returns a response object to each API that an electronic commerce application calls. If the operation fails, then the response object contains status value (IBY_FAILURE), indicating that there was a failure while processing the request. In these cases, electronic commerce application can get more information about the failure by checking the error code and the error message. Errors can happen in iPayment for various reasons. For example, wrong or duplicate data passed by the electronic commerce application, time out while communicating with Payment Systems, etc. All the errors that can occur in iPayment can be categorized in groups. These groups are:

- Common Errors
- Errors Due to Invalid or Duplicate Data
- Communication Errors
- Configuration Errors

Common Errors

The following table contains the most common errors.

Table B–1 Error Codes and their Description

Error Code	Description
IBY_0001	Communications error. The payment system, the processor, or iPayment electronic commerce servlet is not accessible. You should resubmit the request at a later time.
IBY_0002	Duplicate order identifier.

Table B–1 Error Codes and their Description

Error Code	Description
IBY_0003	Duplicate batch identifier.
IBY_0004	Mandatory fields are required.
IBY_0005	Payment system specific error. Check BEPErrCode and BEPErrMsg in response objects for more information.
IBY_0006	Batch partially succeeded. Some transactions in the batch failed and some were processed correctly.
IBY_0007	The batch failed. You should correct the problem and resubmit the batch.
IBY_0008	Requested action is not supported by the payment system.
IBY_0017	Insufficient funds.
IBY_0019	Invalid credit card or bank account number.

Errors Due to Invalid or Duplicate Data

In each payment request, a payment instrument from which the money is transferred to the payee's account is involved. Generally this information i given by the end user of the electronic commerce application. Sometimes the end user might enter wrong instrument number or an instrument number that does not have enough funds. To detect these errors, iPayment provides two error codes that help electronic commerce applications to prompt the end user for correct information.

The error codes due to invalid or duplicate data and their descriptions are given in the following table.

Table B–2 Error codes and their description due to invalid data or duplicate data

Error Code	Description
IBY_0017	Insufficient funds
IBY_0019	Invalid credit card / bank account number

Communication Errors

Since payment processing requests involve a number of different components that are not tightly integrated, timeout errors or communication errors are possible. For example, a processor successfully processes a payment request, but the network connection between the payment system and iPayment, or the network connection

between iPayment's PL/SQL API package and iPayment electronic commerce servlet break down, causing the electronic commerce application not to receive the result. In some cases, electronic commerce application might crash before receiving a response. Before the crash, payment processing may have completed. Therefore, when electronic commerce application calls the API with the same information, iPayment considers this a duplicate request and raises an error. To recover from such errors, iPayment provides two approaches.

In the first approach, which is applicable to OraPmtReq and OraPmtCredit, the electronic commerce application can try the request with the retry flag set up to TRUE. This makes iPayment retry the request if it has not processed the request. Otherwise iPayment sends the same response that was sent when this request was first made.

In the second approach, which is applicable to all other operations except OraPmtReq and OraPmtCredit, the electronic commerce application needs to find out if the transactions went through successfully to reexecute any lost transactions. To enable the merchant or business to query the status of a transaction, you need to integrate the Query Transaction Status API in the electronic commerce application. This API returns all existing records for a particular transaction identifier on a payment system.

The following table describes a communication error code and its description.

Table B–3 Communication Error code

Error Code	Description
IBY_0001	The payment system, the processor, or iPayment's electronic commerce servlet is not accessible. You should resubmit the request at a later time.

Configuration Errors

These errors occur if payees or payment systems are not configured properly. Make sure that the URLs are entered correctly and the payee's payment system identifiers are configured properly.

C

iPayment PL/SQL APIs

Electronic Commerce PL/SQL APIs

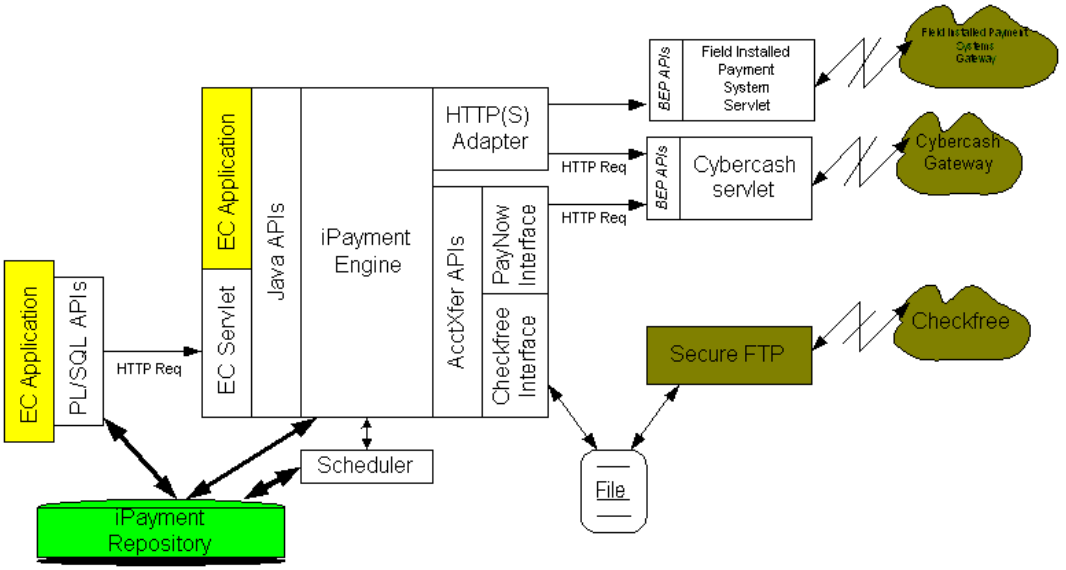
This appendix describes iPayment 11i PL/SQL API specifications for electronic commerce applications (EC-Apps) that require/prefer PL/SQL interfaces for processing credit card and bank account transfer payment related operations. These APIs could be invoked by EC-Apps with appropriate values to perform payment operations.

The following sections contain architectural overview of iPayment PL/SQL APIs, the signatures of each API, and definitions for each in/out parameters.

Architectural Overview

The following diagram shows the overall architecture of iPayment 11i and where the PL/SQL APIs fit inside this architecture.

Figure C–1 iPayment Architecture



PL/SQL based EC-Apps can invoke the PL/SQL APIs which are stored in the applications database. These APIs in turn pass the payment related request, via HTTP, to the iPayment middle tier through iPayment, receives the response and passes this response to the calling application through response records.

EC-Apps can invoke the APIs either in an offline or online mode depending on the requirements of the applications.

(For more information on different modes of payment, please refer to Understanding Offline and Online Payments in the latest version of *Oracle iPayment Concepts and Procedures*. For the offline requests, the scheduler is invoked periodically to send appropriate requests to the Back End Payment Systems and the status returned is passed back to the ECApp.For more information on how scheduler and offline operations work, See How the Scheduling System Works in the latest version of *Oracle iPayment Concepts and Procedure*. For more information on how status is updated, please refer to Status Update API.

PL/SQL APIs Procedure Definitions

This section consists of the iPayment PL/SQL APIs which are supported in the 11i release. All the procedures described below are declared public and are stored in the PL/SQL Package IBY_PAYMENT_ADAPTER_PUB as part of the applications database. All these procedures share some common IN and OUT parameters which are described below.

Table C–1 Common IN Parameters

p_api_version	IN	NUMBER	This parameter is to conform to the Oracle applications API standard. It is the version to be used for the API. The current supported version is 1.0 and so use 1.0
p_init_msg_list	IN	VARCHAR2	This parameter is to conform to the Oracle Applications API standard. Use FND_API.G_ FALSE which is also the default value.
p_commit	IN	VARCHAR2	This parameter is to conform to the Oracle Applications API standard and hasn't been implemented for these APIs. Use FND_API.G_ FALSE which is also the default value.
p_validation_level	IN	NUMBER	This parameter is to conform to the Oracle Applications API standard. Use FND_API.G_ VALID_LEVEL_FULL which is also the default value.
p_ecapp_id	IN	NUMBER	The id of EC-App which is invoking the API.

Table C–2 Common OUT Parameters

x_return_status	OUT	VARCHAR2	Used to indicate the return status of the procedure. This parameter is to conform to the Oracle applications API standard.
x_msg_count	OUT	NUMBER	The error message count holds the number of error messages in the API message list. This parameter is to conform to the Oracle applications API standard
x_msg_data	OUT	VARCHAR2	Contains the error messages. This parameter is to conform to the Oracle applications API standard

Note: These APIs return a single x_return_status as 'S' for overall success, and 'U' for any type of errors (both API internal errors and iPayment processing errors included).

If the value of x_return_status is not 'S', then the calling program needs to check both the API message list parameter x_msg_data and the iPayment response objects to identify whether it is an API implementation error or an iPayment related error. The API message list messages will hold all API implementation errors, while the API response objects will hold iPayment related success/errors.

The error message from iPayment may include messages from the BEPs (Back End Payment Systems) in special response object fields (BEPErrCode, BEPErrMessage, ErrLocation). Hence the error messages from iPayment are not added into the message list, consistent with the Java APIs.

The following PL/SQL APIs are described in this section:

- OraPmtReq
- OraPmtMod
- OraPmtCanc
- OraPmtCapture
- OraPmtReturn
- OraPmtVoid
- OraPmtCredit
- OraPmtQryTrxn
- OraPmtCloseBatch
- OraPmtQueryBatch
- OraPmtInq

For more information on Error Codes and their meaning, see Error Handling.

For all the APIs, for description of the PL/SQL records with possible values, see to "PL/SQL Record/Table Types Definitions" in this appendix.

OraPmtReq

API type: Public

Prerequisites for calling the API: None

Function(s) performed by the API:

This API handles new Payment requests from EC-Apps. EC-Apps can make an offline or online payment requests by setting “PmtMode” attribute in “p_ pmtreqtrxn_rec” “OFFLINE” or “ONLINE”. If the attribute of the record is not set explicitly then, by default, payment is considered as “ONLINE” request. If “PmtMode” is set to “OFFLINE”, then attribute “Settlement_date” in “p_ pmtreqtrxn_rec” must be set to proper value.

This API returns a transaction ID if payment request is processed successfully, which can be used later to initiate follow on operation on the payment. For example, to modify a payment or capture the payment, the EC-App will need to pass this transaction ID along with other information that is needed to perform the operation requested.

Response object of the API contains risk response if the payee involved in the payment(on-line) request is risk enabled. EC-Apps can check RiskRespIncluded field in the response to verify if there is a Risk response from iPayment, and if so, check the RiskResponse record for details. This API also accepts additional OPTIONAL risk-related input parameters for evaluating risk of an on-line payment request.

For more information on using Risk Management, see Utilizing Risk Management.

In summary, this API can be used to:

- Authorize credit transactions
- Transfer funds from a bank account transfer
- Do risk analysis
- Schedule payments to be made in future (Offline payments)

Note: This API is also available in an overloaded form, without the Risk related input parameter to enable EC-Apps that may not need risk evaluation functionality to call the OraPmtReq API directly without any Risk related input. All the other inputs and outputs are identical to the above API. Only the input parameter **p_ riskinfo_rec** is absent in the overloaded API’s signature definition.

Signature

```
Procedure OraPmtReq (p_api_version  IN    NUMBER,
                     p_init_msg_list IN   VARCHAR2:=FND_API.G_FALSE
                     p_commit       IN    VARCHAR2:=FND_API.G_FALSE
```

```
                    p_validation_level IN      NUMBER:=FND_API.G_VALID
                                               LEVEL_FULL
                    p_ecapp_id         IN      NUMBER,
                    p_payee_rec        IN      Payee_rec_type,
                    p_payer_rec        IN      Payer_rec_type,
                    p_pmtinstr_rec     IN      PmtInstr_rec_type,
                    p_tangible_rec     IN      Tangible_rec_type,
                    p_pmtreqtrxn_rec   IN      PmtReqTrxn_rec_type,
                    p_riskinfo_rec     IN      RiskInfo_rec_type,
                    x_return_status    OUT     VARCHAR2,
                    x_msg_count        OUT     NUMBER,
                    x_msg_data         OUT     VARCHAR2,
                    x_reqresp_rec      OUT     ReqResp_rec_type)
```

Overloaded API Signature (without risk objects):

```
Procedure OraPmtReq (p_api_version     IN      NUMBER,
                    p_init_msg_list    IN      VARCHAR2:=FND_API.G_FALSE,
                    p_commit           IN      VARCHAR2:=FND_API.G_FALSE,
                    p_validation_level IN      NUMBER:=FND_API.G_VALID_
                                               LEVEL_FULL,
                    p_ecapp_id         IN      NUMBER,
                    p_payee_rec        IN      Payee_rec_type,
                    p_payer_rec        IN      Payer_rec_type,
                    p_pmtinstr_rec     IN      PmtInstr_rec_type,
                    p_tangible_rec     IN      Tangible_rec_type,
                    p_pmtreqtrxn_rec   IN      PmtReqTrxn_rec_type,
                    x_return_status    OUT     VARCHAR2,
                    x_msg_count        OUT     NUMBER,
```

```
x_msg_data      OUT   VARCHAR2,
x_reqresp_rec   OUT   ReqResp_rec_type)
```

Parameters

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
p_api_version	IN	NUMBER	-	Required
p_init_msg_list	IN	VARCHAR2	-	Optional
p_commit	IN	VARCHAR2	-	Optional
p_validation_level	IN	NUMBER	-	Optional
p_ecapp_id	IN	NUMBER	-	Required
p_payee_rec	IN	Payee_rec_type		Required
		Payee_ID	VARCHAR2	Required
p_payer_rec	IN	Payer_rec_type	-	Optional
		Payer_ID	VARCHAR2	Optional
p_pmtinstr_rec	IN	PmtInstr_rec_type	-	Required
		1. PmtInstr_ID	NUMBER	Mandatory if 2 and 3 are both null
Note: Address record is optional overall, but if passed, then the 4 fields Addr1, City, State, Postal Code (1,2,3,4)* are together Mandatory.		2. CreditCardInstr	CreditCardInstr_rec_type	Mandatory if 1 and 3 are null
			CC_Num	Required
			CC_ExpDate	Required
			1.CC_BillingAddr.Address1	Optional*
			2.CC_BillingAddr.City	Optional*
			3.CC_BillingAddr.State	Optional*

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
			4.CC_BillingAddr.PostalCode	Optional*
			5.CC_BillingAddr.Address2	Optional
			6. CC_BillingAddr.Address3	Optional
			7.CC_BillingAddr.County	Optional
			8.CC_BillingAddr.Country	Optional
			9. CC_Type	Optional
			10.CC_HolderName	Optional
			11. FIName	Optional
Note: Address record is optional overall, but if passed, then the 4 fields Addr1, City, State, Postal Code (1,2,3,4)* are together Mandatory.		3.PurchasetCardInstr	PurchaseCardInstr_rec_type	Mandatory if 1 and 3 are null
			PC_Num	Required
			PC_ExpDate	Required
			1.PC_BillingAddr.Address1	Optional*
			2.PC_BillingAddr.City	Optional*
			3.PC_BillingAddr.State	Optional*
			4.PC_BillingAddr.PostalCode	Optional*
			5.PC_BillingAddr.Address2	Optional
			6. PC_BillingAddr.Address3	Optional
			7.PC_BillingAddr.County	Optional
			8.PC_BillingAddr.Country	Optional
			9. PC_Type	Optional
			10.PC_HolderName	Optional
			11. FIName	Optional
			12. PC_SubType	Mandatory

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
		4. BankAcctInstr	BankAcctInstr_rec_type	Mandatory if 1 and 2 are both null
			Bank_ID	Required
			BankAcct_Num	Required
			BankAcct_Type	Required
			Branch_ID	Optional
			FIName	Optional
			BankAcct_HolderName	Required
		5. PmtInstr_ ShortName	VARCHAR2	Optional
p_tangible_rec	IN	Tangible_rec_type		Required
		1. Tangible_ID	VARCHAR2	Required
		2. Tangible_ Amount	NUMBER	Required
		3. Currency_Code	VARCHAR2	Required
		4. RefInfo	VARCHAR2	Optional
		5. Memo	VARCHAR2	Optional
		6. Acct_Num	VARCHAR2	Optional
p_pmtreqtrxn_rec	IN	PmtReqTrxn_rec_ type		Required
	IN	PmtMode	VARCHAR2	Required
	IN	Settlement_Date	DATE	Mandatory for PmtMode = OFFLINE

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
	IN	Check_Flag	VARCHAR2	Optional with default value = 'TRUE' for PmtMode = OFFLINE
	IN	Auth_Type	VARCHAR2	Mandatory for CreditCard
	IN	Retry_Flag	VARCHAR2	Optional
	IN	Org_ID	NUMBER	Optional
	IN	NLS_LANG	VARCHAR2	Optional
	IN	PONum	NUMBER	Mandatory for Purchase Card
	IN	TaxAmount	NUMBER	Optional
	IN	ShipFromZip	VARCHAR2	Optional
	IN	ShipToZip	VARCHAR2	Optional
	IN	AnalyzeRisk	VARCHAR2	Optional
p_riskinfo_rec	IN	RiskInfo_rec_type		Optional
		Formula_Name	VARCHAR2	Optional
		ShipToBillTo_Flag	VARCHAR2	Optional
		Time_Of_Purchase	VARCHAR2	Optional
		Customer_Acct_ Num	VARCHAR2	Optional
x_return_status	OUT	VARCHAR2		
x_msg_count	OUT	NUMBER		
x_msg_data	OUT	VARCHAR2		
x_reqresp_rec	OUT	ReqResp_rec_type		

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
(GENERIC PAYMENT SERVER RESPONSE)	OUT	Response:	Response_rec_type:	
		Status	NUMBER	
		ErrCode	VARCHAR2	
		ErrMessage	VARCHAR2	
		NLS_LANG	VARCHAR2	
	OUT	Trxn_ID	NUMBER	
	OUT	RefCode	VARCHAR2	
	OUT	ErrorLocation	NUMBER	
	OUT	BEPErrCode	VARCHAR2	
	OUT	BEPErrMessage	VARCHAR2	
(OPERATION RELATED RESPONSE)				
	OUT	Trxn_Type	NUMBER	
	OUT	Trxn_Date	DATE	
	OUT	Authcode	VARCHAR2	
	OUT	AVSCode	VARCHAR2	
	OUT	PmtInstr_Type	VARCHAR2	
	OUT	Acquirer	VARCHAR2	
	OUT	VpsBatch_ID	VARCHAR2	
	OUT	AuxMsg	VARCHAR2	

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
(RISK RELATED RESPONSE)	OUT	RiskRespIncluded	VARCHAR2	
		RiskResponse	RiskResp_rec_type	
		Status	NUMBER	
		ErrCode	VARCHAR2	
		ErrMessage	VARCHAR2	
		Additional_ ErrMessage	VARCHAR2	
		Risk_Score	NUMBER	
		Risk_ Threshold_ Val	NUMBER	
		Risk_Flag	VARCHAR2	
(OFFLINE MODE RELATED RESPONSE)	OUT	OffLineResp		
		EarliestSettle ment_Date	DATE	
		Scheduled_ Date	DATE	

OraPmtMod

API type: Public

Prerequisites for calling the API: Existing scheduled Off-line payment request

Function(s) performed by the API:

This API handles modifications to existing Payment request. A payment that was requested earlier by an EC-App can be modified using this API. Payment modification is relevant in case of Scheduled (i.e., OFFLINE) payments. Users may decide to modify a payment before it is sent to the payment system.

The payee and tangible_id cannot be modified. The payment instrument can be modified, but the modified / new payment instrument should be of the same type as the original request. (If original instrument is a credit card, the modified instrument should be a credit card.)

Signature

```
Procedure OraPmtMod (p_api_version        IN    NUMBER,
                     p_init_msg_list      IN    VARCHAR2 := FND_API.G_FALSE,
                     p_commit             IN    VARCHAR2 := FND_API.G_FALSE,
                     p_validation_level   IN    NUMBER := FND_API.G_VALID_
                                                LEVEL_FULL,
                     p_ecapp_id           IN    NUMBER,
                     p_payee_rec          IN    Payee_rec_type,
                     p_payer_rec          IN    Payer_rec_type,
                     p_pmtinstr_rec       IN    PmtInstr_rec_type,
                     p_tangible_rec       IN    Tangible_rec_type,
                     p_modtrxn_rec        IN    ModTxn_rec_type,
                     x_return_status      OUT   VARCHAR2,
                     x_msg_count          OUT   NUMBER,
                     x_msg_data           OUT   VARCHAR2,
                     x_modresp_rec        OUT   ModResp_rec_type)
```

Parameters

Parameter	IN/ OUT	Data Type	Sub Type	Required/ Optional
p_api_version	IN	NUMBER	-	Required
p_init_msg_list	IN	VARCHAR2	-	Optional
p_commit	IN	VARCHAR2	-	Optional
p_validation_level	IN	NUMBER	-	Optional
p_ecapp_id	IN	NUMBER	-	Required
p_payee_rec	IN	Payee_rec_type		Required
		Payee_ID	VARCHAR2	Required
p_payer_rec	IN	Payer_rec_type		Optional

Parameter	IN/ OUT	Data Type	Sub Type	Required/ Optional
		Payer_ID	VARCHAR2	Optional
		Payer_Name	VARCHAR2	Optional
p_pmtinstr_rec	IN	PmtInstr_rec_type		Required
		1. PmtInstr_ID	NUMBER	Mandatory if 2 and 3 are both null
Note: Address record is optional overall, but if passed, then the 4 fields Addr1, City, State, Postal Code (1,2,3,4)* are together Mandatory. .		2. CreditCardInstr	CreditCardInstr_rec_type	Mandatory if 1 and 3 are null
			CC_Num	Required
			CC_ExpDate	Required
			1.CC_ BillingAddr.Address1	Optional*
			2.CC_BillingAddr.City	Optional*
			3.CC_BillingAddr.State	Optional*
			4.CC_ BillingAddr.PostalCode	Optional*
			5.CC_ BillingAddr.Address2	Optional
			6. CC_ BillingAddr.Address3	Optional
			7.CC_BillingAddr.County	Optional
			8.CC_BillingAddr.Country	Optional
			9. CC_Type	Optional

Parameter	IN/ OUT	Data Type	Sub Type	Required/ Optional
			10.CC_HolderName	Optional
			11. FIName	Optional
Note: Address record is optional overall, but if passed, then the 4 fields Addr1, City, State, Postal Code (1,2,3,4)* are together Mandatory.		3.PurchasetCardInstr	PurchaseCardInstr_rec_type	Mandatory if 1 and 3 are null
			PC_Num	Required
			PC_ExpDate	Required
			1.PC_ BillingAddr.Address1	Optional*
			2.PC_BillingAddr.City	Optional*
			3.PC_BillingAddr.State	Optional*
			4.PC_ BillingAddr.PostalCode	Optional*
			5.PC_ BillingAddr.Address2	Optional
			6. PC_ BillingAddr.Address3	Optional
			7.PC_BillingAddr.County	Optional
			8.PC_BillingAddr.Country	Optional
			9. PC_Type	Optional
			10.PC_HolderName	Optional
			11. FIName	Optional
			12. PC_SubType	Mandatory

Parameter	IN/ OUT	Data Type	Sub Type	Required/ Optional
		4. BankAcctInstr	BankAcctInstr_rec_type	Mandatory if 1 and 2 are both null
			Bank_ID	Required
			BankAcct_Num	Required
			BankAcct_Type	Required
			Branch_ID	Optional
			FIName	Optional
			BankAcct_HolderName	Required
		5. PmtInstr_ ShortName	VARCHAR2	Optional
p_pmtinstr_rec	IN	PmtInstr_rec_type		Required
		1. PmtInstr_ID	NUMBER	Mandatory if 2 and 3 are both null
Note: Address record is optional overall, but if passed, then the 4 fields Addr1, City, State, Postal Code (1,2,3,4)* are together Mandatory.		2. CreditCardInstr	CreditCardInstr_rec_typ	Mandatory if 1 and 3 are null
			CC_Num	Required
			CC_ExpDate	Required
			1.CC_ BillingAddr.Address1	Optional*
			2.CC_BillingAddr.City	Optional*
			3.CC_BillingAddr.State	Optional*
			4.CC_ BillingAddr.PostalCode	Optional*

Parameter	IN/ OUT	Data Type	Sub Type	Required/ Optional
			5.CC_ BillingAddr.Address2	Optional
			6. CC_ BillingAddr.Address3	Optional
			7.CC_BillingAddr.County	Optional
			8.CC_BillingAddr.Country	Optional
			9. CC_Type	Optional
			10.CC_HolderName	Optional
			11. FIName	Optional
		3. BankAcctInstr	BankAcctInstr_rec_type	Mandatory if 1 and 2 are both null
			Bank_ID	Required
			BankAcct_Num	Required
			BankAcct_Type	Required
			Branch_ID	Optional
			FIName	Optional
			BankAcct_HolderName	Required
p_tangible_rec	IN	Tangible_rec_type		Required
		1.Tangible_ID	VARCHAR2	Required
		2 Tangible_Amount	NUMBER	Required
		3.Currency_Code	VARCHAR2	Required
		4.RefInfo	VARCHAR2	Optional
		5. Memo	VARCHAR2	Optional
		6. Acct_Num	VARCHAR2	Optional
p_modtrxn_rec	IN	ModTrxn_rec_type		Required
		PmtMode	VARCHAR2	Required
		Trxn_ID	NUMBER	Required

Parameter	IN/ OUT	Data Type	Sub Type	Required/ Optional
		Auth_Type	VARCHAR2	Mandatory for CreditCard
		Settlement_Date	DATE	Mandatory for PmtMode= OFFLINE
		Check_Flag	VARCHAR2	Optional with default value = 'TRUE' for PmtMode = OFFLINE
	IN	PONum	NUMBER	Mandatory for Purchase Card
	IN	TaxAmount	NUMBER	Optional
	IN	ShipFromZip	VARCHAR2	Optional
	IN	ShipToZip	VARCHAR2	Optional
x_return_status	OUT	VARCHAR2		
x_msg_count	OUT	NUMBER		
x_msg_data	OUT	VARCHAR2		
x_modresp_rec	OUT	ModResp_rec_type		
(GENERIC PAYMENT SERVER RESPONSE)	OUT	Response	Response_rec_type	
		Status	NUMBER	
		ErrCode	VARCHAR2	
		ErrMessage	VARCHAR2	
		NLS_LANG	VARCHAR2	
	OUT	Trxn_ID	NUMBER	

Parameter	IN/ OUT	Data Type	Sub Type	Required/ Optional
(OFFLINE MODE RELATED RESPONSE)	OUT	OffLineResp		
		EarliestSettlement_ Date	DATE	
		Scheduled_Date	DATE	

OraPmtCanc

API type: Public

Prerequisites for calling the API: Existing scheduled Offline payment operation that should be canceled. The payment operations that can be canceled are payment request, capture etc.

Function(s) performed by the API:

This API handles cancellations of offline payment operations. For offline operations, since the operation information is maintained in the database, this API can cancel the entire operation before it gets to reach the payment system. If the payment operation is already submitted to payment system, then cancellation will not happen.

Signature

```
Procedure OraPmtCanc (p_api_version IN     NUMBER,
                      p_init_msg_list IN   VARCHAR2 := FND_API.G_FALSE,
                      p_commit        IN   VARCHAR2 := FND_API.G_FALSE,
                      p_validation_level IN NUMBER := FND_API.G_VALID_
                                           LEVEL_FULL,
                      p_ecapp_id      IN   NUMBER,
                      p_canctrxn_rec  IN   CancelTrxn_rec_type,
                      x_return_status OUT  VARCHAR2,
                      x_msg_count     OUT  NUMBER,
                      x_msg_data      OUT  VARCHAR2,
```

x_cancresp_rec OUT CancelResp_rec_type)

Parameters

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
p_api_version	IN	NUMBER	-	Required
p_init_msg_list	IN	VARCHAR2	-	Optional
p_commit	IN	VARCHAR2	-	Optional
p_validation_level	IN	NUMBER	-	Optional
p_ecapp_id	IN	NUMBER	-	Required
p_canctrxn_rec	IN	CancelTrxn_rec_type		Required
	IN	Trxn_ID	NUMBER	Required
		Req_Type	VARCHAR2	Required
	IN	NLS_LANG	VARCHAR2	Optional
x_return_status	OUT	VARCHAR2		
x_msg_count	OUT	NUMBER		
x_msg_data	OUT	VARCHAR2		
x_cancresp_rec	OUT	CancelResp_rec_type		
(GENERIC PAYMENT SERVER RESPONSE)	OUT	Response	Response_rec_type	
		Status	NUMBER	
		ErrCodeErr	VARCHAR2	
		Message	VARCHAR2	
		NLS_LANG	VARCHAR2	
(CANCEL OPERATION RELATED RESPONSE)				
	OUT	Trxn_ID	NUMBER	
	OUT	ErrorLocation	NUMBER	
	OUT	BEPErrCode	VARCHAR2	
	OUT	BEPErrMessage	VARCHAR2	

OraPmtCapture

API type: Public

Prerequisites for calling the API: Previously authorized payment request operation.

Function(s) performed by the API:

The Capture API is invoked by the EC-App to perform capture of a previously authorized operation. The captured amount may or may not be the same as the authorized amount. An authorized operation can only be captured once.

Each authorization operation is valid for a limited time (3-30 days depending on the cardholder's bank) before expiring. If capture cannot be performed before the authorization expires, the merchant must reauthorize the payment, with a different tangible_id.

Signature

```
Procedure OraPmtCapture (p_api_version      IN   NUMBER,
                         p_init_msg_list    IN   VARCHAR2 := FND_API.G_FALSE,
                         p_commit           IN   VARCHAR2 := FND_API.G_FALSE,
                         p_validation_levelIN    NUMBER :=FND_API.G_VALID_
                                                 LEVEL_FULL,
                         p_ecapp_id         IN   NUMBER,
                         p_capturetrxn_rec  IN   CaptureTrxn_rec_type,
                         x_return_status    OUT  VARCHAR2,
                         x_msg_count        OUT  NUMBER,
                         x_msg_data         OUT  VARCHAR2,
                         x_capresp_rec      OUT  CaptureResp_rec_type)
```

Parameters

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
p_api_version	IN	NUMBER	-	Required
p_init_msg_list	IN	VARCHAR2	-	Optional

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
p_commit	IN	VARCHAR2	-	Optional
p_validation_ level	IN	NUMBER	-	Optional
p_ecapp_id	IN	NUMBER	-	Required
p_capturetrxn_ rec	IN	CaptureTrxn_rec_type		Required
		Trxn_ID	NUMBER	Required
		PmtMode	VARCHAR2	Required
		Settlement_Date	DATE	Mandatory if PmtMode is OFFLINE
		Currency	VARCHAR2	Required
		Price	NUMBER	Required
		NLS_LANG	VARCHAR2	Optional
x_return_status	OUT	VARCHAR2		
x_msg_count	OUT	NUMBER		
x_msg_data	OUT	VARCHAR2		
x_capresp_rec	OUT	CaptureResp_rec_type		
(GENERIC PAYMENT SERVER RESPONSE)	OUT	Response	Response_rec_type	
		Status	NUMBER	
		ErrCode	VARCHAR2	
		ErrMessage	VARCHAR2	
		NLS_LANG	VARCHAR2	
(CAPTURE OPERATION RELATED RESPONSE)				
	OUT	Trxn_ID	NUMBER	
	OUT	Trxn_Type	NUMBER	
	OUT	Trxn_Date	DATE	
	OUT	PmtInstr_Type	VARCHAR2	

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
	OUT	RefCode	VARCHAR2	
	OUT	ErrorLocation	NUMBER	
	OUT	BEPErrCode	VARCHAR2	
	OUT	BEPErrMessage	VARCHAR2	
(OFFLINE MODE RELATED RESPONSE)	OUT	OffLineResp		
		EarliestSettlement_Date	DATE	
		Scheduled_Date	DATE	

OraPmtReturn

API type: Public

Prerequisites for calling the API: Previous payment capture operation

Function(s) performed by the API:

This API is invoked by the EC-App to credit a customer account in the case where customer returns goods purchased through a previously captured payment operation. Only one return can be applied against each order, subsequent returns must be treated as standalone credits. The operation takes in the transaction ID of the initial payment operation, and returns the same transaction ID as part of the output.

Signature

```
Procedure OraPmtReturn (p_api_version      IN   NUMBER,
                        p_init_msg_list    IN   VARCHAR2 := FND_API.G_FALSE,
                        p_commit           IN   VARCHAR2 := FND_API.G_FALSE,
                        p_validation_level IN   NUMBER := FND_API.G_VALID_
                                                LEVEL_FULL,
                        p_ecapp_id         IN   NUMBER,
                        p_returntrxn_rec   IN   ReturnTrxn_rec_type,
                        x_return_status    OUT  VARCHAR2,
                        x_msg_count        OUT  NUMBER,
```

```
                    x_msg_data      OUT VARCHAR2,
                    x_retresp_rec   OUT ReturnResp_rec_type)
```

Parameters

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
p_api_version	IN	NUMBER	-	Required
p_init_msg_list	IN	VARCHAR2	-	Optional
p_commit	IN	VARCHAR2	-	Optional
p_validation_level	IN	NUMBER	-	Optional
p_ecapp_id	IN	NUMBER	-	Required
p_returntrxn_rec	IN	ReturnTrxn_rec_type		Required
		Trxn_ID	NUMBER	Required
		PmtMode	VARCHAR2	Required
		Settlement_Date	DATE	Mandatory if PmtMode is OFFLINE
		Currency	VARCHAR2	Required
		Price	NUMBER	Required
		NLS_LANG	VARCHAR2	Optional
x_return_status	OUT	VARCHAR2		
x_msg_count	OUT	NUMBER		
x_msg_data	OUT	VARCHAR2		
x_returnresp_rec	OUT	ReturnResp_rec_type		
(GENERIC PAYMENT SERVER RESPONSE)	OUT	Response	Response_rec_type	
		Status	NUMBER	
		ErrCode	VARCHAR2	
		ErrMessage	VARCHAR2	
		NLS_LANG	VARCHAR2	

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
(RETURN OPERATION RELATED RESPONSE)				
	OUT	Trxn_ID	NUMBER	
	OUT	Trxn_Type	NUMBER	
	OUT	Trxn_Date	DATE	
	OUT	PmtInstr_Type	VARCHAR2	
	OUT	RefCode	VARCHAR2	
	OUT	ErrorLocation	NUMBER	
	OUT	BEPErrCode	VARCHAR2	
	OUT	BEPErrMessage	VARCHAR2	
(OFFLINE MODE RELATED RESPONSE)	OUT	OffLineResp		
		EarliestSettlement_Date	DATE	
		Scheduled_Date	DATE	

OraPmtVoid

API type: Public

Prerequisites for calling the API:Existing payment operations

Function(s) performed by the API:

The Void API voids a capture or return operation for an order before the operation is settled. It takes in the transaction ID of the initial payment request and returns the same transaction ID as part of the output. Void Operations can be performed on “Capture”, “Return” and “Credit” Operations for all back-end Payment Systems, and on “Authorization” operations for certain back-end payment systems.

The Void operation has to be used to void the most recent operation for the designated Order ID. For example, you perform a capture and then a return operation for a particular Order ID, if you try to void the capture, it’ll result in an error.

Signature

```
Procedure OraPmtVoid (p_api_version      IN   NUMBER,
                      p_init_msg_list    IN   VARCHAR2 := FND_API.G_FALSE,
                      p_commit           IN   VARCHAR2 := FND_API.G_FALSE,
                      p_validation_level IN   NUMBER := FND_API.G_VALID_
                                              LEVEL_FULL,
                      p_ecapp_id         IN   NUMBER,
                      p_voidtrxn_rec     IN   VoidTrxn_rec_type,
                      x_return_status    OUT  VARCHAR2,
                      x_msg_count        OUT  NUMBER,
                      x_msg_data         OUT  VARCHAR2,
                      x_voidresp_rec     OUT  VoidResp_rec_type)
```

Parameters

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
p_api_version	IN	NUMBER	-	Required
p_init_msg_list	IN	VARCHAR2	-	Optional
p_commit	IN	VARCHAR2	-	Optional
p_validation_level	IN	NUMBER	-	Optional
p_ecapp_id	IN	NUMBER	-	Required
p_voidtrxn_rec	IN	VoidTrxn_rec_type		Required
		Trxn_ID	NUMBER	Required
		PmtMode	VARCHAR2	Required
		Settlement_Date	DATE	Mandatory if PmtMode is OFFLINE
		Trxn_Type	VARCHAR2	Required
		NLS_LANG	VARCHAR2	Optional
x_return_status	OUT	VARCHAR2		

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
x_msg_count	OUT	NUMBER		
x_msg_data	OUT	VARCHAR2		
x_voidresp_rec	OUT	VoicResp_rec_type		
(GENERIC PAYMENT SERVER RESPONSE)	OUT	Response	Response_rec_type	
		Status	NUMBER	
		ErrCode	VARCHAR2	
		ErrMessage	VARCHAR2	
		NLS_LANG	VARCHAR2	
(VOID OPERATION ONLINE MODE RELATED RESPONSE)				
	OUT	Trxn_ID	NUMBER	
	OUT	Trxn_Type	NUMBER	
	OUT	Trxn_Date	DATE	
	OUT	PmtInstr_Type	VARCHAR2	
	OUT	RefCode	VARCHAR2	
	OUT	ErrorLocation	NUMBER	
	OUT	BEPErrCode	VARCHAR2	
	OUT	BEPErrMessage	VARCHAR2	
(OFFLINE MODE RELATED RESPONSE)	OUT	OffLineResp		
		EarliestSettlement_Date	DATE	
		Scheduled_Date	DATE	

OraPmtCredit

API type: Public

Prerequisites for calling the API: None

Function(s) performed by the API:

This API is invoked by the EC-App to credit a customer account in the case that the merchant wants to issue a “standalone credit”(i.e., a credit not associated with any previous order). It returns the transaction ID as part of the output.

Signature

```
Procedure OraPmtCredit (p_api_version      IN   NUMBER,
                        p_init_msg_list    IN   VARCHAR2 := FND_API.G_FALSE,
                        p_commit           IN   VARCHAR2 := FND_API.G_FALSE,
                        p_validation_level IN   NUMBER := FND_API.G_VALID_
                                                LEVEL_FULL,
                        p_ecapp_id         IN   NUMBER,
                        p_payee_rec        IN   Payee_rec_type,
                        p_pmtinstr_rec     IN   PmtInstr_rec_type,
                        p_tangible_rec     IN   Tangible_rec_type,
                        p_credittrxn_rec   IN   CreditTrxn_rec_type,
                        x_return_status    OUT  VARCHAR2,
                        x_msg_count        OUT  NUMBER,
                        x_msg_data         OUT  VARCHAR2,
                        x_creditresp_rec   OUT  CreditResp_rec_type)
```

Parameters

Parameter	IN/ OUT	Data Type	Sub Type	Required/ Optional
p_api_version	IN	NUMBER	-	Required
p_init_msg_list	IN	VARCHAR2	-	Optional
p_commit	IN	VARCHAR2	-	Optional
p_validation_ level	IN	NUMBER	-	Optional
p_ecapp_id	IN	NUMBER	-	Required
p_payee_rec	IN	Payee_rec_type		Required

Parameter	IN/ OUT	Data Type	Sub Type	Required/ Optional
		Payee_ID	VARCHAR2	Required
p_pmtinstr_rec	IN	PmtInstr_rec_type		Required
		1. PmtInstr_ID	NUMBER	Mandatory if 2 and 3 are both null
Note: Address record is optional overall, but if passed, then the 4 fields Addr1, City, State, Postal Code (1,2,3,4)* are together Mandatory.		2. CreditCardInstr	CreditCardInstr_rec_type	Mandatory if 1 and 3 are null
			CC_Num	Required
			CC_ExpDate	Required
			1.CC_BillingAddr.Address1	Optional*
			2.CC_BillingAddr.City	Optional*
			3.CC_BillingAddr.State	Optional*
			4.CC_ BillingAddr.PostalCode	Optional*
			5.CC_BillingAddr.Address2	Optional
			6. CC_BillingAddr.Address3	Optional
			7.CC_BillingAddr.County	Optional
			8.CC_BillingAddr.Country	Optional
			9. CC_Type	Optional
			10.CC_HolderName	Optional
			11. FIName	Optional

Parameter	IN/ OUT	Data Type	Sub Type	Required/ Optional
Note: Address record is optional overall, but if passed, then the 4 fields Addr1, City, State, Postal Code (1,2,3,4)* are together Mandatory.		3.PurchasetCardInstr	PurchaseCardInstr_rec_type	Mandatory if 1 and 3 are null
			PC_Num	Required
			PC_ExpDate	Required
			1.PC_BillingAddr.Address1	Optional*
			2.PC_BillingAddr.City	Optional*
			3.PC_BillingAddr.State	Optional*
			4.PC_ BillingAddr.PostalCode	Optional*
			5.PC_BillingAddr.Address2	Optional
			6. PC_BillingAddr.Address3	Optional
			7.PC_BillingAddr.County	Optional
			8.PC_BillingAddr.Country	Optional
			9. PC_Type	Optional
			10.PC_HolderName	Optional
			11. FIName	Optional
			12. PC_SubType	Mandatory
Note: This operation (Credit) is not supported for bank accounts in this release. This record will be ignored.		4. BankAcctInstr	BankAcctInstr_rec_type	Mandatory if 1 and 2 are both null

Parameter	IN/ OUT	Data Type	Sub Type	Required/ Optional
			Bank_ID	Required
			BankAcct_Num	Required
			BankAcct_Type	Required
			Branch_ID	Optional
			FIName	Optional
			BankAcct_HolderName	Required
		5. PmtInstr_ ShortName	VARCHAR2	Optional
p_tangible_rec	IN	Tangible_rec_type		Required
		1.Tangible_ID	VARCHAR2	Required
		2 Tangible_Amount	NUMBER	Required
		3.Currency_Code	VARCHAR2	Required
		4.RefInfo	VARCHAR2	Optional
		5. Memo	VARCHAR2	Optional
		6. Acct_Num	VARCHAR2	Optional
p_credittrxn_rec	IN	CreditTrxn_rec_type		Required
	IN	PmtMode	VARCHAR2	Required
		Settlement_Date	DATE	Mandatory for PmtMode= OFFLINE
		Org_ID	NUMBER	Optional
		NLS_LANG	VARCHAR2	Optional
x_return_status	OUT	VARCHAR2		
x_msg_count	OUT	NUMBER		
x_msg_data	OUT	VARCHAR2		
x_creditresp_rec	OUT	CreditResp_rec_type		

Parameter	IN/ OUT	Data Type	Sub Type	Required/ Optional
(GENERIC PAYMENT SERVER RESPONSE)	OUT	Response	Response_rec_type	
		Status	NUMBER	
		ErrCode	VARCHAR2	
		ErrMessage	VARCHAR2	
		NLS_LANG	VARCHAR2	
(CREDIT OPERATION RELATED RESPONSE)				
	OUT	Trxn_ID	NUMBER	
	OUT	Trxn_Type	NUMBER	
	OUT	Trxn_Date	DATE	
	OUT	PmtInstr_Type	VARCHAR2	
	OUT	RefCode	VARCHAR2	
	OUT	ErrorLocation	NUMBER	
	OUT	BEPErrCode	VARCHAR2	
	OUT	BEPErrMessage	VARCHAR2	
(OFFLINE MODE RELATED RESPONSE)	OUT	OffLineResp		
		EarliestSettlement_ Date	DATE	
		Scheduled_Date	DATE	

OraPmtQryTrxn

API type: Public

Prerequisites for calling the API:None

Function(s) performed by the API:

This API provides an interface for querying payment operations details. This API will return either all the operations performed on the queried transaction id or the latest operation, based on the value of the History_Flag which is one of the input parameters. Payment Mode is always '**ONLINE**' for this operation.

Signature

```
Procedure OraPmtQryTrxn (p_api_version          IN    NUMBER,
                         p_init_msg_list        IN    VARCHAR2 := FND_API.G_FALSE,
                         p_commit               IN    VARCHAR2 := FND_API.G_FALSE,
                         p_validation_level     IN    NUMBER := FND_API.G_VALID_
                                                      LEVEL_FULL,
                         p_ecapp_id             IN    NUMBER,
                         p_querytrxn_rec        IN    QueryTrxn_rec_type,
                         x_return_status        OUT   VARCHAR2,
                         x_msg_count            OUT   NUMBER,
                         x_msg_data             OUT   VARCHAR2,
                x_qrytrxnrespsum_rec            OUT   QryTrxnRespSum_rec_type,
                x_qrytrxnrespdet_tbl            OUT   QryTrxnRespDet_tbl_type)
```

Parameters

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
p_api_version	IN	NUMBER	-	Required
p_init_msg_list	IN	VARCHAR2	-	Optional
p_commit	IN	VARCHAR2	-	Optional
p_validation_level	IN	NUMBER	-	Optional
p_ecapp_id	IN	NUMBER	-	Required
p_querytrxn_rec	IN	QueryTrxn_rec_type		Required
		Trxn_ID	NUMBER	Required
		History_Flag	VARCHAR2	Required
		NLS_LANG	VARCHAR2	Optional
x_return_status	OUT	VARCHAR2		
x_msg_count	OUT	NUMBER		
x_msg_data	OUT	VARCHAR2		

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
x_qrytrxnrespsum_rec	OUT	QryTrxnRespSum_rec_ type		
	OUT	Response	Response_rec_type	
		Status	NUMBER	
		ErrCode	VARCHAR2	
		ErrMessag	VARCHAR2	
		NLS_LANG	VARCHAR2	
	OUT	ErrorLocation	NUMBER	
	OUT	BEPErrCode	VARCHAR2	
	OUT	BEPErrMessage	VARCHAR2	
x_qrytrxnrespdet_tbl N.B.: All detail records name-value pairs will have '-n' suffixed to show the index value 'n'	OUT	QryTrxnRespDet_tbl_ type		
	OUT	Status	NUMBER	
	OUT	StatusMsg	VARCHAR2	
	OUT	Trxn_ID	NUMBER	
	OUT	Trxn_Type	NUMBER	
	OUT	Trxn_Date	DATE	
	OUT	PmtInstr_Type	VARCHAR2	
	OUT	Currency	VARCHAR2	
	OUT	Price	NUMBER	
	OUT	RefCode	VARCHAR2	
	OUT	AuthCode	VARCHAR2	
	OUT	AVSCode	VARCHAR2	
	OUT	Acquirer	VARCHAR2	
	OUT	VpsBatch_ID	VARCHAR2	
	OUT	AuxMsg	VARCHAR2	

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
	OUT	ErrorLocation	NUMBER	
	OUT	BEPErrCode	VARCHAR2	
	OUT	BEPErrMessage	VARCHAR2	

OraPmtCloseBatch

API type: Public

Prerequisites for calling the API: Existing current batch of operations

Function(s) performed by the API:

This API allows a merchant or business to close a batch of previously performed operations. The operation types that can be included in a batch are capture, return and credit. This operation is mandatory for a terminal-based merchant; a host-based merchant may not need to explicitly close the batch since the batch is generally closed at predetermined intervals automatically by the processor.

For more information on terminal-based merchant, please refer to "Understanding Terminal Based Merchant" in the *Oracle iPayment Concepts and Procedures.*

Signature

```
Procedure OraPmtCloseBatch (p_api_version IN    NUMBER,
                            p_init_msg_list IN  VARCHAR2 := FND_API.G_
                                                FALSE,
                            p_commit        IN  VARCHAR2 := FND_API.G_
                                                FALSE,
                            p_validation_levelIN NUMBER := FND_API.G_VALID_
                                                LEVEL_FULL,
                            p_ecapp_id      IN  NUMBER,
                            p_batchtrxn_rec IN  BatchTrxn_rec_type,
                            x_return_status OUT VARCHAR2,
                            x_msg_count     OUT NUMBER,
                            x_msg_data      OUT VARCHAR2,
```

x_closebatchrespsum_rec OUT BatchRespSum_rec_type,

x_closebatchrespdet_tbl OUT BatchRespDet_tbl_type

Parameters

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
p_api_version	IN	NUMBER	-	Required
p_init_msg_list	IN	VARCHAR2	-	Optional
p_commit	IN	VARCHAR2	-	Optional
p_validation_level	IN	NUMBER	-	Optional
p_ecapp_id	IN	NUMBER	-	Required
p_batchtrxn_rec	IN	BatchTrxn_rec_type		Required
	IN	PmtMode	VARCHAR2	Required
		PmtType	VARCHAR2	Optional
	IN	Settlement_Date	DATE	Mandatory if PmtMode is OFFLINE
	IN	Payee_ID	VARCHAR2	Required
	IN	MerchBatch_ID	VARCHAR2	Required
	IN	NLS_LANG	VARCHAR2	Optional
x_return_status	OUT	VARCHAR2		
x_msg_count	OUT	NUMBER		
x_msg_data	OUT	VARCHAR2		
x_closebatchrespsum_rec	OUT	BatchRespSum_rec_type		
	OUT	Response	Response_rec_type	
		Status	NUMBER	
		ErrCode	VARCHAR2	
		ErrMessage	VARCHAR2	
		NLS_LANG	VARCHAR2	

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
(OFFLINE MODE RELATED RESPONSE)	OUT	OffLineResp	OffLineResp_rec_ type	
	OUT	EarliestSettlement_Date	DATE	
		Scheduled_Date	DATE	
	OUT	NumTrxns	NUMBER	
	OUT	MerchBatch_ID	VARCHAR2	
	OUT	BatchState	NUMBER	
	OUT	BatchDate	DATE	
	OUT	Payee_ID	VARCHAR2	
	OUT	Credit_Amount	NUMBER	
	OUT	Sales_Amount	NUMBER	
	OUT	Batch_Total	NUMBER	
	OUT	Currency	VARCHAR2	
	OUT	VpsBatch_ID	VARCHAR2	
	OUT	GWBatch_ID	VARCHAR2	
	OUT	ErrorLocation	NUMBER	
	OUT	BEPErrCode	VARCHAR2	
	OUT	BEPErrMessage	VARCHAR2	
x_closebatchrespdet_ tblN.B.: All detail records name-value pairs will have '-n' suffixed to show the index value 'n'	OUT	BatchRespDet_tbl_type		
	OUT	Trxn_ID	NUMBER	
	OUT	Trxn_Type	NUMBER	
	OUT	Trxn_Date	DATE	
	OUT	Status	NUMBER	
	OUT	ErrorLocation	NUMBER	
	OUT	BEPErrCode	VARCHAR2	

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
	OUT	BEPErrMessage	VARCHAR2	
	OUT	NLSLANG	VARCHAR2	

OraPmtQueryBatch

API type: Public

Prerequisites for calling the API: None

Function(s) performed by the API:

This API provides an interface to query the status of any previous batch of operations by providing the Batch ID (i.e., MerchBatch_ID) as part of the input. Payment Mode is always '**ONLINE**' for this operation.

Signature

```
Procedure OraPmtQueryBatch (p_api_version          IN    NUMBER,
                            p_init_msg_list        IN    VARCHAR2 := FND_API.G_
                                                         FALSE,
                            p_commit               IN    VARCHAR2 := FND_API.G_
                                                         FALSE,
                            p_validation_level     IN    NUMBER :=FND_API.G_
                                                         VALID_LEVEL_FULL,
                            p_ecapp_id             IN    NUMBER,
                            p_batchtrxn_rec        IN    BatchTrxn_rec_type,
                            x_return_status        OUT   VARCHAR2,
                            x_msg_count            OUT   NUMBER,
                            x_msg_data             OUT   VARCHAR2,
                        x_qrybatchrespsum_rec      OUT   BatchRespSum_rec_type,
                        x_qrybatchrespdet_tbl      OUT   BatchRespDet_tbl_type)
```

Parameters

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
p_api_version	IN	NUMBER	-	Required
p_init_msg_list	IN	VARCHAR2	-	Optional
p_commit	IN	VARCHAR2	-	Optional
p_validation_level	IN	NUMBER	-	Optional
p_ecapp_id	IN	NUMBER	-	Required
p_batchtrxn_rec	IN	BatchTrxn_rec_type		Required
	IN	PmtMode	VARCHAR2	Required
(will be NULL since always PmtMode ='ONLINE')	IN	Settlement_Date	DATE	Mandatory if PmtMode is OFFLINE
	IN	Payee_ID	VARCHAR2	Required
	IN	MerchBatch_ID	VARCHAR2	Required
	IN	NLS_LANG	VARCHAR2	Optional
x_return_status	OUT	VARCHAR2		
x_msg_count	OUT	NUMBER		
x_msg_data	OUT	VARCHAR2		
x_qrybatchrespsum_rec	OUT	BatchRespSum_rec_type		
	OUT	Response	Response_rec_type	
		Status	NUMBER	
		ErrCode	VARCHAR2	
		ErrMessage	VARCHAR2	
		NLS_LANG	VARCHAR2	
	OUT	NumTrxns	NUMBER	
		MerchBatch_ID	VARCHAR2	
		BatchState	NUMBER	
		BatchDate	DATE	
		Payee_ID	VARCHAR2	

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
		Credit_Amount	NUMBER	
		Sales_Amount	NUMBER	
		Batch_Total	NUMBER	
		Currency	VARCHAR2	
		VpsBatch_ID	VARCHAR2	
		GWBatch_ID	VARCHAR2	
		ErrorLocation	NUMBER	
		BEPErrCode	VARCHAR2	
		BEPErrMessage	VARCHAR2	
x_qrybatchrespdet_ tblN.B.: All detail records name-value pairs will have '-n' suffixed to show the index value 'n'	OUT	BatchRespDet_tbl_type		
	OUT	Trxn_ID	NUMBER	
	OUT	Trxn_Type	NUMBER	
	OUT	Trxn_Date	DATE	
	OUT	Status	NUMBER	
	OUT	ErrorLocation	NUMBER	
	OUT	BEPErrCode	VARCHAR2	
	OUT	BEPErrMessage	VARCHAR2	
	OUT	NLS_LANG	VARCHAR2	

OraPmtInq

API type: Public

Prerequisites for calling the API: None

Function(s) performed by the API:

This API provides high-level payment information such as Payee, Payer, Instrument, and Tangible related information. It can be used when all the

information regarding a payment is needed. So an EC-App which does not store all the payment related information locally, can invoke this API to find all the information pertaining to the payment operation. Typically used to display the information to the end user for editing in case of OFFLINE operation in an application like internet payments.

It takes in the ECApp ID and the transaction ID as input parameters.

Signature

```
Procedure OraPmtInq(p_api_version      IN    NUMBER,
                    p_init_msg_list    IN    VARCHAR2 := FND_API.G_FALSE,
                    p_commit           IN    VARCHAR2 := FND_API.G_FALSE,
                    p_validation_level IN    NUMBER := FND_API.G_
                                             VALID_LEVEL_FULL,
                    p_ecapp_id         IN    NUMBER,
                    p_tid              IN    NUMBER,
                    x_return_status    OUT   VARCHAR2,
                    x_msg_count        OUT   NUMBER,
                    x_msg_data         OUT   VARCHAR2,
                    x_inqresp_rec      OUT   InqResp_rec_type)
```

Parameters

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
p_api_version	IN	NUMBER	-	Required
p_init_msg_list	IN	VARCHAR2	-	Optional
p_commit	IN	VARCHAR2	-	Optional
p_validation_level	IN	NUMBER	-	Optional
p_ecapp_id	IN	NUMBER	-	Required
p_tid	IN	NUMBER	-	Required
x_return_status	OUT	VARCHAR2		

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
x_msg_count	OUT	NUMBER		
x_msg_data	OUT	VARCHAR2		
x_inqresp_rec	OUT	InqResp_rec_type		
(GENERIC PAYMENT SERVER RESPONSE)	OUT	Response	Response_rec_type	
		Status	NUMBER	
		ErrCode	VARCHAR2	
		ErrMessage	VARCHAR2	
		NLS_LANG	VARCHAR2	
(INQUIRY OPERATION RELATED RESPONSE)				
	OUT	Payer	Payer_rec_type	
		Payer_ID	VARCHAR2	
		Payer_Name	VARCHAR2	
	OUT	Payee	Payee_rec_type	
		Payee_ID	VARCHAR2	
	OUT	Tangible	Tangible_rec_type	
		Tangible_ID	VARCHAR2	
		Tangible_Amount	NUMBER	
		Currency_Code	VARCHAR2	
		RefInfo	VARCHAR2	
		Memo	VARCHAR2	
		Acct_Num	VARCHAR2	

Parameter	IN/ OUT	DataType	SubType	Required/ Optional
	OUT	PmtInstr	PmtInstr_rec_type	
		PmtInstr_ID		
		PmtInstr_ShortName		
		CreditCardInstr	CreditCardInstr_rec_type	
			CC_Num	
			CC_ExpDate	
			CC_BillingAddr.Address1	
			CC_BillingAddr.Address2	
			CC_BillingAddr.Address3	
			CC_BillingAddr.City	
			CC_BillingAddr.County	
			CC_BillingAddr.State	
			CC_BillingAddr.Country	
			CC_BillingAddr.PostalCode	
			CC_Type	
			CC_HolderName	
			FIName	
		BankAcctInstr	BankAcctInstr_rec_type	
			Bank_ID	
			BankAcct_Num	
			BankAcct_Type	
			Branch_ID	
			FIName	
			BankAcct_HolderName	

PL/SQL Record/Table Types Definitions

The following PL/SQL record/table types are defined to store the objects (entities) necessary for the ECApp PL/SQL APIs. For information on Mandatory, Conditionally Mandatory, and Optional fields in these records/tables, please refer to the ensuing API descriptions, where these requirements are tabulated.

Payments Related Generic Record Types

1. TYPE **Payee_rec_type** IS RECORD (

```
Payee_ID            VARCHAR2(80)
```

);

Payee_ID: ID of the payee

2. TYPE **Payer_rec_type** IS RECORD (

```
Payer_ID            VARCHAR2(80),
Payer_Name          VARCHAR2(80)
```

);

Payer_ID: ID of the payer

Payee_Name: Name of the payer

3. TYPE **Address_rec_type** IS RECORD (

```
Address1            VARCHAR2(80),
Address2            VARCHAR2(80),
Address3            VARCHAR2(80),
City                VARCHAR2(80),
County              VARCHAR2(80),
State               VARCHAR2(80),
Country             VARCHAR2(80),
PostalCode          VARCHAR2(40),
Phone               VARCHAR2(40),
Email               VARCHAR2(40)
```

);

Address1: The first line of the street address.

Address2: The second line of the street address.

Address3: The third line of the street address.

City: City in the address

State: State in the address

County: County in the address

Country: Country code in the address.

Postalcode: Zip for the address

Phone: Phone for that address. It is for informational purposes only.

Email: It is not supported right now.

4. TYPE **CreditCardInstr_rec_type** IS RECORD (

FIName	VARCHAR2(80),
CC_Type	VARCHAR2(80),
CC_Num	VARCHAR2(80),
CC_ExpDate	DATE,
CC_HolderName	VARCHAR2(80),
CC_BillingAddr	Address_rec_type

);

Financial Institution Name (FIName): *Optional*, should be at least of non-trivial length 3.

CC_Type: Type of credit card (MASTERCARD, VISA, AMEX, …)

CC_Num: For *credit card number*, it should be numeric other than dashes and spaces. However, it will be stored without any spaces or dashes.

CC_ExpDate: Credit Card expiration date.

CC_HolderName: Credit card holder name

CC_BillingAddr: Address type record for the billing address of the credit card.

5. TYPE **PurchaseCardInstr_rec_type** IS RECORD (

FIName	VARCHAR2(80),
PC_Type	VARCHAR2(80),
PC_Num	VARCHAR2(80),
PC_ExpDate	DATE,
PC_HolderName	VARCHAR2(80),
PC_BillingAddr	Address_rec_type,

PC_Subtype VARCHAR2(80)

);

Financial Institution Name (FIName): *Optional*, should be at least of non-trivial length 3.

PC_Type: Type of purchase card (MASTERCARD, VISA, AMEX, …)

PC_Num: For *purchase card number*, it should be numeric other than dashes and spaces. However, it will be stored without any spaces or dashes.

PC_ExpDate: Purchase Card expiration date.

PC_HolderName: Purchase card holder name

PC_BillingAddr: Address type record for the billing address of the purchase card.

PC_Subtype: The subtype for purchase card. Possible values are ('B'/'C'/'P'/'U') which are for BUSINESS / CORPORATE / PURCHASE / UNKNOWN.

6. TYPE **BankAcctInstr_rec_type** IS RECORD (

FIName VARCHAR2(80),

Bank_ID NUMBER,

Branch_ID NUMBER,

BankAcct_Type VARCHAR2(80),

BankAcct_Num VARCHAR2(80),

BankAcct_HolderName VARCHAR2(80)

);

Financial Institution Name (FIName): *Required*, should be at least of non-trivial length 3.

Bank_ID: Routing number of the bank. Should be at least of non-trivial length 2.

Branch_ID: ID of the branch.

BankAcct_Type: Should be of at least non-trivial length 3. Such as CHECKING

BankAcct_Num: For *bank account number*, should be at least of non-trivial length 3.

BankAcct_HolderName: Name of the bank account holder

7. TYPE **PmtInstr_rec_type** IS RECORD (

PmtInstr_ID NUMBER,

PmtInstr_ShortName	VARCHAR2(80),
CreditCardInstrCredit	CardInstr_rec_type,
BankAcctInstr	BankAcctInstr_rec_type,
PurchaseCardInstr	PurchaseCardInstr_rec_type

);

PmtInstr_ID: The payment instrument ID of an already registered payment instrument.

PmtInstr_ShortName: Short name for the payment instrument.

CreditCardInstr: Credit card instrument type record. Refer #4 for details.

BankAcctInstr: Bank account instrument type record. Refer #6 for details.

PurchaseCardInstr: Purchase card instrument type record. Refer #5 for details.

Note: The Payment Instrument Type (i.e., CREDITCARD / PURCHASECARD / BANKACCOUNT / UNREGISTERED) is derived from the input data, by verifying which of the input instrument records (i.e., CreditCardInstr, PurchaseCardInstr, BankAcctInstr, PmtInstr_ID) are provided with input values. That particular instrument type and its component fields are then passed to the iPayment11i EC-Servlet. So, either PmtInstr_ID alone is provided for registered instruments, OR one of the other two (i.e., CreditCardInstr, PurchaseCardInstr, BankAcctInstr) is provided as part of payment instrument input.

8. TYPE **Tangible_rec_type** IS RECORD (

Tangible_ID	VARCHAR2(80),
Tangible_Amount	NUMBER,
Currency_Code	VARCHAR2(80),
RefInfo	VARCHAR2(80),
Memo	VARCHAR2(80),
Acct_Num	VARCHAR2(80)

);

Tangible_ID: It is the order id or bill id. It should be unique for a given payee

Tangible_Amount: Should be a positive number.

Currency_Code: The 3 letter currency code.

RefInfo: Reference information for this bill / order

Memo: Memo for this bill / order.

Acct_Num: Account number of the customer, if applicable.

Payment Operations Related Record Types

1. TYPE **PmtReqTrxn_rec_type** IS RECORD (

PmtMode	VARCHAR2(30),
Settlement_Date	DATE:=,
Auth_Type	VARCHAR2(80),
Check_Flag	VARCHAR2(30),
Retry_Flag	VARCHAR2(30),
Org_ID	NUMBER,
NLS_LANG	VARCHAR2(80),
PONum	NUMBER,
TaxAmount	NUMBER,
ShipFromZip	VARCHAR2(80),
ShipToZip	VARCHAR2(80),
AnalyzeRisk	VARCHAR2(80)
AuthCode	VARCHAR2(255)
VoiceAuthFlag	VARCHAR2(30)

);

PmtMode: Its value should be either ONLINE or OFFLINE.

Settlement_Date: *Ignored for all ONLINE requests, required for OFFLINE requests*. It is the date by which you wish the operation to be settled.

Check flag: *Ignored for ONLINE requests, optional for OFFLINE requests*. It is meaningful only for OFFLINE Bank Account transfer operations when the user requested settle date is *earlier* the earliest date it can be settled by the system. When check flag is set to true, the operation will be rejected if it cannot be settled by user specified settle date, otherwise, the operation will get scheduled with the earliest

settle date available by the system, and a warning message will be returned saying unable to meet user specified date.

Retry flag: Should be either 'Y' or 'N'.

Applicable for ONLINE Credit Card Request and Credit operations.

You should set this flag to 'Y' when previous request when the same operation may have been processed by the back payment system. For example, when first request returns with a time out status, or when OraPmtQryTrxn failed to retrieve the information. This flag is passed as is to the backend payment system. Check with individual backend payment system for further details.

Org_ID: The identifier for the organization submitting the request.

Applicable for new operations (Request, Modify, Credit). Should be a positive integer.

Auth_Type: *Applicable for credit card authorization(request), modify, and credit operation only.* Takes one of the following values:

AUTHONLY: terminal-based / host-based authorization only

AUTHCAPTURE: host-based authorization and capture together

AUTHANDCAPTURE: authorization followed by capture. When this is used, it's equivalent of doing 'oraPmtReq with authonly' followed by 'oraPmtCapture' on the same transaction for authorization and capture

NLSLang: The NLS language code

PONum: Purchase order number for this transaction

TaxAmount: Amount of transaction that is tax

ShipFromZip: The ZIP code from which merchandise will be shipped.

ShipToZip: The ZIP code to which merchandise will be shipped.

AnalyzeRisk: ***need description here***

AuthCode: The authorization Code that the financial institution issues after doing a voice authorization. This field is required if the VoiceAuthFlag is set to 'Y'.

VoiceAuthFlag: Should be set up to either Y or N. This indicates whether the current transaction refers to a voice authorization (where the financial institution has already been contacted directly). If this field is set up as 'Y', then the AuthCode field is required to have the some value.

2. TYPE **ModTrxn_rec_type** IS RECORD (

```
    Trxn_ID             NUMBER,
    PmtMode             VARCHAR2(30),
    Settlement_Date     DATE,
    Check_Flag          VARCHAR2(30),
    Auth_Type           VARCHAR2(80),
    PONum               NUMBER,
    TaxAmount           NUMBER,
    ShipFromZip         VARCHAR2(80),
    ShipToZip           VARCHAR2(80)
);
```

Trxn_ID:. The transaction id for the operation which has to be modified.

PmtMode:. Its value should be either ONLINE or OFFLINE.

Settlement_Date: *Ignored for all ONLINE requests, required for OFFLINE requests*. It is the date by which you wish the operation to be settled.

Check flag: *Ignored for ONLINE requests, optional for OFFLINE requests*. It is meaningful only for OFFLINE operations when the user requested settle date is *earlier* the earliest date it can be settled by the system. When check flag is set to true, the operation will be rejected if it cannot be settled by user specified settle date, otherwise, the operation will get scheduled with the earliest settle date available by the system, and a warning message will be returned saying unable to meet user specified date.

Auth_Type: *Applicable for credit card authorization(request), modify, and credit operation only.* Takes one of the following values:

AUTHONLY: terminal-based / host-based authorization only

AUTHCAPTURE: host-based authorization and capture together

AUTHANDCAPTURE: authorization followed by capture. When this is used, it's equivalent of doing 'oraPmtReq with authonly' followed by 'oraPmtCapture' on the same transaction for authorization and capture

PONum: Purchase order number for this transaction

TaxAmount: Amount of transaction that is tax

ShipFromZip: The ZIP code from which merchandise will be shipped.

ShipToZip: The ZIP code to which merchandise will be shipped.

3. TYPE **CaptureTrxn_rec_type** IS RECORD (

Trxn_ID	NUMBER,
PmtMode	VARCHAR2(30),
Settlement_Date	DATE,
Currency	VARCHAR2(80),
Price	NUMBER,
NLS_LANG	VARCHAR2(80)

);

Trxn_ID:. The transaction id for the operation which has to be captured.

PmtMode:. Its value should be either ONLINE or OFFLINE.

Settlement_Date: *Ignored for all ONLINE requests, required for OFFLINE requests*. It is the date by which you wish the operation to be settled.

Currency: Should be a 3-letter code.

Price: Should be a positive amount. The amount of money to be captured.

NLSLang: The NLS language code

4. TYPE **ReturnTrxn_rec_type** IS RECORD (

Trxn_ID	NUMBER,
PmtMode	VARCHAR2(30),
Settlement_Date	DATE,
Currency	VARCHAR2(80),
Price	NUMBER,
NLS_LANG	VARCHAR2(80)

);

Trxn_ID:. The transaction id for the operation which has to be returned.

PmtMode:. Its value should be either ONLINE or OFFLINE.

Settlement_Date: *Ignored for all ONLINE requests, required for OFFLINE requests*. It is the date by which you wish the operation to be settled.

Currency: Should be a 3-letter code.

Price: Should be a positive amount. The amount of money to be captured.

NLSLang: The NLS language code

5. TYPE **CancelTrxn_rec_type** IS RECORD (

Trxn_ID	NUMBER,
Req_Type	VARCHAR2,
NLS_LANG	VARCHAR2(80)

);

Trxn_ID:. The transaction id for the operation which has to be returned.

Req_Type: optional field provides the option of canceling other operations (such as Void, Return, etc.), in addition to scheduled payment requests. By Default, this Req_ Type field is set to 'ORAPMTREQ' to cancel the authorization operation.

NLSLang: The NLS language code

6. TYPE **QueryTrxn_rec_type** IS RECORD (

Trxn_ID	NUMBER,
History_Flag	VARCHAR2(30),
NLS_LANG	VARCHAR2(80)

);

Trxn_ID:. The transaction id for the operation which has to be queried.

History_Flag: takes in values => 'TRUE' or 'FALSE'. When set to TRUE, it retrieves the entire history, otherwise it retrieves the latest one only.

NLSLang: The NLS language code

7. TYPE **VoidTrxn_rec_type** IS RECORD (

Trxn_ID	NUMBER,
PmtMode	VARCHAR2(30),
Settlement_Date	DATE,
Trxn_Type	NUMBER,
NLS_LANG	VARCHAR2(80)

);

Trxn_ID:. The transaction id for the operation which has to be voided. The type of the operation will be specified in Trxn_Type

PmtMode:. Its value should be either ONLINE or OFFLINE.

Settlement_Date: *Ignored for all ONLINE requests, required for OFFLINE requests*. It is the date by which you wish the operation to be settled.

NLSLang: The NLS language code

Trxn_Type: takes the following numeric values:

Lookup Code	Meaning	Description
2	AuthOnly	Online authorization requested for an order
3	AuthCapture	Online authorization & capture for an order
4	VoidAuthOnly	Void an order authorized but not captured
5	Return	Return on an order which is authorized & captured
6	ECRefund	Refund on a purchase done using EC cash / coin
7	VoidAuthCapture	Voids a previously authorized & captured trxn
8	Capture	Capture funds for previously authorized trxn.
9	MarkCapture	Marked for capture by terminal based system
10	MarkReturn	Marked for return by terminal based system
11	Credit	Refund money to customer
13	VoidCapture	Void operation captured by host based system
14	VoidMarkCapture	Void operation marked for capture by terminal based system
17	VoidReturn	Void return operation for host based system
18	VoidMarkReturn	Void operation marked for return by terminal based system
102	Batch Admin	Used for open, purge, query, and close batch operations

8. TYPE **CreditTrxn_rec_type** IS RECORD (

PmtMode VARCHAR2(30),

Settlement_Date DATE,

Retry_Flag	VARCHAR2(30),
Org_ID	NUMBER,
NLS_LANG	VARCHAR2(80)

);

PmtMode:. Its value should be either ONLINE or OFFLINE.

Settlement_Date: *Ignored for all ONLINE requests, required for OFFLINE requests*. It is the date by which you wish the operation to be settled.

Retry flag: Should be either 'Y' or 'N'.

Applicable for ONLINE Credit Card Request and Credit operations.

You should set this flag to 'Y' when previous request when the same operation may have been processed by the back payment system. For example, when first request returns with a time out status, or when OraPmtQryTrxn failed to retrieve the information. This flag is passed as is to the backend payment system. Check with individual backend payment system for further details.

Org_ID: The identifier for the organization submitting the request.

NLSLang: The NLS language code

9. TYPE **BatchTrxn_rec_type** IS RECORD (

PmtMode	VARCHAR2(30),
PmtType	VARCHAR2(30),
Settlement_Date	DATE,
Payee_ID	NUMBER,
MerchBatch_ID	VARCHAR2(80),
NLS_LANG	VARCHAR2(80)

);

PmtMode:. Its value should be either ONLINE or OFFLINE.

PmtType: optional, defaulted to empty string. You need specify it if you wish to operate on a back end payment system rather than the default one.

Settlement_Date: *Ignored for all ONLINE requests, required for OFFLINE requests*. It is the date by which you wish the operation to be settled.

Payee_ID: It's the payee identifier for whom the batch operation is performed.

MerchBatch_ID: It's the user selected identifier for this operation. Should be a non-empty string, and should be unique across all merchant batch ids from a particular payee.

NLSLang: The NLS language code

Risk Management Record Types

1. TYPE **RiskInfo_rec_type** IS RECORD (

Formula_Name	VARCHAR2(80),
ShipToBillTo_Flag	VARCHAR2(255),
Time_Of_Purchase	VARCHAR2(80),
Customer_Acct_Num	NUMBER

);

Formula_Name: Name of the formula to be used.

ShipToBillTo_Flag: used to notify whether the "Ship_To" and the "Bill_To" addresses match or not ('TRUE' / 'FALSE').

Time_Of_Purchase: represents the time duration passed in 'HH:MI' format in 24 Hours notation. For example, 11 pm will be denoted as '23:00'.

Customer_Acct_Num: represents the payer's account number in Oracle Accounts Receivables. This field is needed in AR - risk factors evaluation.

Note: For more information on using Risk Management, please refer to the documentation for the "Integrating Risk Management" under the section "Implementing iPayment".

Payment Operations Response Record/Table Types

1. TYPE **Response_rec_type** IS RECORD (

Status	NUMBER,
ErrCode	VARCHAR2(80),
ErrMessage	VARCHAR2(255),
NLS_LANG	VARCHAR2(80)

);

Status: The status for the request. Possible values are (0,1,2 or 3).

ErrCode: The IBY_XXXX error code for the error, if any.

ErrMessage: The error message associated with the error

NLS_LANG: The NLS code.

NOTE: *This record is included in all the responses and the status of the operation can be found by looking at the value of status.* Possible values for Status are: (0 => 'Success', 1=> 'Information', 2=> 'Warning', 3=> 'Error').

For more information on Error Codes and their meaning, please refer to "Error Handling during Payment Processing" in this document.

2. TYPE **OffLineResp_rec_type** IS RECORD (

```
EarliestSettlement_Date DATE,
Scheduled_Date          DATE
);
```

If the payment operation cannot be settled by the settlement date specified in input, due to lead time of the BEP, then

EarliestSettlement_Date: specifies the earliest date by which the operation can be settled

Scheduled_Date: specifies the date on which scheduler will pick up the operation.

The **OffLineResp_rec_type** record outputs can be looked into for payment operations sent in OFFLINE Mode**.**

For more information on how the status values are propagated back to the ECApp, please refer to "Status Update API for Offline Request" in this document.

3. TYPE **RiskResp_rec_type** IS RECORD (

```
Status                  NUMBER,
ErrCode                 VARCHAR2(80),
ErrMessage              VARCHAR2(255),
Additional_ErrMessage   VARCHAR2(255),
Risk_Score              NUMBER,
Risk_Threshold_Val      NUMBER,
Risky_Flag              VARCHAR2(30)
);
```

Status: The status for the request. Possible values are (0,1,2 or 3).

ErrCode: The IBY_XXXX error code for the error, if any.

ErrMessage: The error message associated with the error

Additional_ErrMessage: if multiple factors have failed, this field contains additional messages about why the factors failed.

Risk_Score: represents the overall risk score of the payment request.

Risk_Threshold_Val: the threshold value that is set for the payee involved in the payment request.

Risky_Flag: indicates whether payment is risky or not.

4. TYPE **ReqResp_rec_type** IS RECORD (

Response	Response_rec_type,
OffLineResp	OffLineResp_rec_type,
RiskRespIncluded	VARCHAR2(30),
RiskResponseRisk	Resp_rec_type,
Trxn_ID	NUMBER,
Trxn_Type	NUMBER,
Trxn_Date	DATE,
Authcode	VARCHAR2(80),
RefCode	VARCHAR2(80),
AVSCode	VARCHAR2(80),
PmtInstr_Type	VARCHAR2(80),
Acquirer	VARCHAR2(80),
VpsBatch_ID	VARCHAR2(80),
AuxMsg	VARCHAR2(255),
ErrorLocation	NUMBER,
BEPErrCode	VARCHAR2(80),
BEPErrMessage	VARCHAR2(255)

);

Response: The response record. Refer #1 for details.

OffLineResp: The offline response record. Refer #2 for details.

RiskRespIncluded: Flag used to indicate whether risk response included or not. Possible values ('YES'/'NO')/

RiskResponse: The risk response record. Refer #3 for details.

Trxn_ID: The new id generated for this request

Trxn_Type: The type of the capture operation. Backend system may distinguish between Capture and MarkCapture.

Trxn_Date: The date of the operation

AuthCode: Authorization code that is returned by back end payment system

RefCode: Reference code that is returned by back end payment system

AVSCode: AVS code that is returned by back end payment system

PmtInstr_Type: Credit card type of the operation, such as 'Visa'.

Acquirer: Acquirer information that is returned by back end payment system

VPSBatch_ID: VPSBatchId that is returned by back end payment system

AuxMsg: Auxiliary message that is returned by back end payment system

ErrorLocation: The error location, if applicable. It is a number which indicates what place the error has occurred, like middle tier or the Back End Payment(BEP) system.

BEPErrCode: The error code, if applicable, returned by the BEP

BEPErrMessage: The error message, if applicable, returned by the BEP.

Note: RiskRespIncluded is a flag ('YES'/'NO') that tells the ECAPP that the RiskResponse Record contains some valid Risk response information.

5. TYPE **ModResp_rec_type** IS RECORD (

Response	Response_rec_type,
OffLineResp	OffLineResp_rec_type,
Trxn_ID	NUMBER

);

Response: The response record. Refer #1 for details.

OffLineResp: The offline response record. Refer #2 for details.

Trxn_ID: The new id generated for this request

6. TYPE **VoidResp_rec_type** IS RECORD (

Response	Response_rec_type,
OffLineResp	OffLineResp_rec_type,
Trxn_ID	NUMBER,
Trxn_Type	NUMBER,
Trxn_Date	DATE,
RefCode	VARCHAR2(80),
PmtInstr_Type	VARCHAR2(80),
ErrorLocation	NUMBER,
BEPErrCode	VARCHAR2(80),
BEPErrMessage	VARCHAR2(255)

);

Response: The response record. Refer #1 for details.

OffLineResp: The offline response record. Refer #2 for details.

Trxn_ID: The transaction id for this request

Trxn_Type: The type of the capture operation. Backend system may distinguish between Capture and MarkCapture.

Trxn_Date: The date of the operation

RefCode: Reference code that is returned by back end payment system

PmtInstr_Type: Credit card type of the operation, such as 'Visa'.

ErrorLocation: The error location, if applicable. It is a number which indicates what place the error has occurred, like middle tier or the Back End Payment(BEP) system.

BEPErrCode: The error code, if applicable, returned by the BEP

BEPErrMessage: The error message, if applicable, returned by the BEP.

7. TYPE **CancelResp_rec_type** IS RECORD (

Response	Response_rec_type,
Trxn_ID	NUMBER,

ErrorLocation	NUMBER,
BEPErrCode	VARCHAR2(80),
BEPErrMessage	VARCHAR2(255)

);

Response: The response record. Refer #1 for details.

Trxn_ID: The transaction id for this request

ErrorLocation: The error location, if applicable. It is a number which indicates what place the error has occurred, like middle tier or the Back End Payment(BEP) system.

BEPErrCode: The error code, if applicable, returned by the BEP

BEPErrMessage: The error message, if applicable, returned by the BEP.

8. TYPE **CaptureResp_rec_type** IS RECORD (

Response	Response_rec_type,
OffLineResp	OffLineResp_rec_type,
Trxn_ID	NUMBER,
Trxn_Type	NUMBER,
Trxn_Date	DATE,
PmtInstr_Type	VARCHAR2(80),
RefCode	VARCHAR2(80),
ErrorLocation	NUMBER,
BEPErrCode	VARCHAR2(80),
BEPErrMessage	VARCHAR2(255)

);

Response: The response record. Refer #1 for details.

OffLineResp: The offline response record. Refer #2 for details.

Trxn_ID: The transaction id for this request

Trxn_Type: The type of the capture operation. Backend system may distinguish between Capture and MarkCapture.

Trxn_Date: The date of the operation

PmtInstr_Type: Credit card type of the operation, such as 'Visa'.

ErrorLocation: The error location, if applicable. It is a number which indicates what place the error has occurred, like middle tier or the Back End Payment(BEP) system.

BEPErrCode: The error code, if applicable, returned by the BEP

BEPErrMessage: The error message, if applicable, returned by the BEP.

9. TYPE **ReturnResp_rec_type** IS RECORD (

Response	Response_rec_type,
OffLineResp	OffLineResp_rec_type,
Trxn_ID	NUMBER,
Trxn_Type	NUMBER,
Trxn_Date	DATE,
PmtInstr_TypeV	ARCHAR2(80),
RefCode	VARCHAR2(80),
ErrorLocation	NUMBER,
BEPErrCode	VARCHAR2(80),
BEPErrMessage	VARCHAR2(255)

);

Response: The response record. Refer #1 for details.

OffLineResp: The offline response record. Refer #2 for details.

Trxn_ID: The transaction id for this request

Trxn_Type: The type of the capture operation. Backend system may distinguish between Capture and MarkCapture.

Trxn_Date: The date of the operation

PmtInstr_Type: Credit card type of the operation, such as 'Visa'.

RefCode: Reference code that is returned by back end payment system

ErrorLocation: The error location, if applicable. It is a number which indicates what place the error has occurred, like middle tier or the Back End Payment(BEP) system.

BEPErrCode: The error code, if applicable, returned by the BEP

BEPErrMessage: The error message, if applicable, returned by the BEP.

10. TYPE **CreditResp_rec_type** IS RECORD (

Response	Response_rec_type,
OffLineResp	OffLineResp_rec_type,
Trxn_ID	NUMBER,
Trxn_Type	NUMBER,
Trxn_Date	DATE,
PmtInstr_Type	VARCHAR2(80),
RefCode	VARCHAR2(80),
ErrorLocation	NUMBER,
BEPErrCode	VARCHAR2(80),
BEPErrMessage	VARCHAR2(255)

);

Response: The response record. Refer #1 for details.

OffLineResp: The offline response record. Refer #2 for details.

Trxn_ID: The transaction id for this request

Trxn_Type: The type of the capture operation. Backend system may distinguish between Capture and MarkCapture.

Trxn_Date: The date of the operation

PmtInstr_Type: Credit card type of the operation, such as 'Visa'.

RefCode: Reference code that is returned by back end payment system

ErrorLocation: The error location, if applicable. It is a number which indicates what place the error has occurred, like middle tier or the Back End Payment(BEP) system.

BEPErrCode: The error code, if applicable, returned by the BEP

BEPErrMessage: The error message, if applicable, returned by the BEP.

11. TYPE **InqResp_rec_type** IS RECORD (

Response	Response_rec_type,
Payer	Payer_rec_type,
Payee	Payee_rec_type,

Tangible	Tangible_rec_type,
PmtInstr	PmtInstr_rec_type

);

Response: The response record. Refer #1 for details.

Payer: The payer record. Refer 1.4.1#2 for details.

Payee: The payee record. Refer 1.4.1#1 for details.

Tangible: The tangible record. Refer 1.4.1#6 for details.

PmtInstr: The pmtinstr record. Refer 1.4.1#7 for details.

12. TYPE **QryTrxnRespSum_rec_type** IS RECORD (

Response	Response_rec_type,
ErrorLocation	NUMBER,
BEPErrCode	VARCHAR2(80),
BEPErrMessage	VARCHAR2(255)

);

Response: The response record. Refer #1 for details.

ErrorLocation: The error location, if applicable. It is a number which indicates what place the error has occurred, like middle tier or the Back End Payment(BEP) system.

BEPErrCode: The error code, if applicable, returned by the BEP

BEPErrMessage: The error message, if applicable, returned by the BEP.

13. TYPE **QryTrxnRespDet_rec_type** IS RECORD (

Status	NUMBER,
StatusMsg	VARCHAR2(255),
Trxn_ID	NUMBER,
Trxn_Type	NUMBER,
Trxn_Date	DATE,
PmtInstr_Type	VARCHAR2(80),
Currency	VARCHAR2(80),
Price	NUMBER,

```
    RefCode             VARCHAR2(80),
    AuthCode            VARCHAR2(80),
    AVSCode             VARCHAR2(80),
    Acquirer            VARCHAR2(80),
    VpsBatch_ID         VARCHAR2(80),
    AuxMsg              VARCHAR2(255),
    ErrorLocation       NUMBER,
    BEPErrCode          VARCHAR2(80),
    BEPErrMessage       VARCHAR2(255)
);
```

Status: The status for this request

StatusMsg: The status message for this request.

Trxn_ID: The transaction id for this request

Trxn_Type: The type of the capture operation. Backend system may distinguish between Capture and MarkCapture.

Trxn_Date: The date of the operation

PmtInstr_Type: Credit card type of the operation, such as 'Visa'.

Currency: Should be a 3-letter code.

Price: Should be a positive amount. The amount of money to be captured.

RefCode: Reference code that is returned by back end payment system

AuthCode: Authorization code that is returned by back end payment system

AVSCode: AVS code that is returned by back end payment system

Acquirer: Acquirer information that is returned by back end payment system

VPSBatch_ID: VPSBatchId that is returned by back end payment system

AuxMsg: Auxiliary message that is returned by back end payment system

ErrorLocation: The error location, if applicable. It is a number which indicates what place the error has occurred, like middle tier or the Back End Payment(BEP) system.

BEPErrCode: The error code, if applicable, returned by the BEP

BEPErrMessage: The error message, if applicable, returned by the BEP.

14. TYPE **QryTrxnRespDet_tbl_type** IS TABLE OF QryTrxnRespDet_rec_type INDEX BY BINARY_INTEGER;

Batch Payment Operations Response Record/Table Types

1. TYPE **BatchRespSum_rec_type** IS RECORD (

Response	Response_rec_type,
OffLineResp	OffLineResp_rec_type,
NumTrxns	NUMBER,
MerchBatch_ID	VARCHAR2(80),
BatchState	NUMBER,
BatchDate	DATE,
Credit_Amount	NUMBER,
Sales_Amount	NUMBER,
Batch_Total	NUMBER,
Payee_ID	VARCHAR2(80),
VpsBatch_ID	VARCHAR2(80),
GWBatch_ID	VARCHAR2(80),
Currency	VARCHAR2(80),
ErrorLocation	NUMBER,
BEPErrCode	VARCHAR2(80),
BEPErrMessage	VARCHAR2(255)

);

Response: The response record. Refer #1 for details.

OffLineResp: The offline response record. Refer #2 for details.

NumTrxns: Total number of individual operations in this batch

Merch Batch_ID: Merchant-specified unique batch id for this batch operation

BatchState: The state of the batch operation

BatchDate: The date of the batch operation

Credit_Amount: Total amount of credits.

Sales_Amount: Total amount of charges.

Batch_Total: Total amount of the entire batch.

VPSBatch_ID: VPSBatchId returned by the backend payment system

GWBatch_ID: GWBatchId returned by the backend payment system

Currency: The currency code used

ErrorLocation: The error location, if applicable. It is a number which indicates what place the error has occurred, like middle tier or the Back End Payment(BEP) system.

BEPErrCode: The error code, if applicable, returned by the BEP

BEPErrMessage: The error message, if applicable, returned by the BEP.

2. TYPE **BatchRespDet_rec_type** IS RECORD (

Trxn_ID	NUMBER,
Trxn_Type	NUMBER,
Trxn_Date	DATE,
Status	NUMBER,
ErrorLocation	NUMBER,
BEPErrCode	VARCHAR2(80),
BEPErrMessage	VARCHAR2(255),
NLS_LANG	VARCHAR2(80)

);

Trxn_ID: The transaction id for this request

Trxn_Type: The type of the capture operation. Backend system may distinguish between Capture and MarkCapture.

Trxn_Date: The date of the operation

Status: The status for this request

ErrorLocation: The error location, if applicable. It is a number which indicates what place the error has occurred, like middle tier or the Back End Payment(BEP) system.

BEPErrCode: The error code, if applicable, returned by the BEP

BEPErrMessage: The error message, if applicable, returned by the BEP.

NLSLang: The NLS language code

3. TYPE **BatchRespDet_tbl_type** IS TABLE OF **BatchRespDet_rec_type** INDEX BY BINARY_INTEGER;

Sample PL/SQL Code

The following PL/SQL code helps you in understanding how iPayment PL/SQL APIs can be invoked. This example code invokes the Payment Request API using a credit card. It also passes risk related information for risk evaluation. After invoking the PL/SQL API, it prints out all the elements in the response objects.

```
DECLARE
   p_api_version                NUMBER := 1.0;
   --To initialize message list.
   p_init_msg_list              VARCHAR2(2000) := FND_API.G_TRUE;
   p_commit                     VARCHAR2(2000) := FND_API.G_FALSE;
   p_validation_level           NUMBER := FND_API.G_VALID_LEVEL_FULL;
   p_ecapp_id                   NUMBER := 0;
   p_payee_rec                  IBY_PAYMENT_ADAPTER_PUB.Payee_rec_type;
   p_payer_rec                  IBY_PAYMENT_ADAPTER_PUB.Payer_rec_type;
   p_pmtinstr_rec               IBY_PAYMENT_ADAPTER_PUB.PmtInstr_rec_type;
   p_tangible_rec               IBY_PAYMENT_ADAPTER_PUB.Tangible_rec_type;
   p_pmtreqtrxn_rec             IBY_PAYMENT_ADAPTER_PUB.PmtReqTrxn_rec_
                                type;
   p_riskinfo_rec               IBY_PAYMENT_ADAPTER_PUB.RiskInfo_rec_type;
   x_return_status              VARCHAR2(2000);-- output/return status
   x_msg_count                  NUMBER;-- output message count
   x_msg_data                   VARCHAR2(2000);-- reference string for output
                                                  message text
   x_reqresp_rec                IBY_PAYMENT_ADAPTER_PUB.ReqResp_rec_type;
```

```
                                                    -- request specific output
                                                    -- response object
   l_msg_count                  NUMBER;
   l_msg_data                   VARCHAR2(2000);
BEGIN
-- Common inputs
p_ecapp_id := 66;-- iPayment generated ECAppID
-- Payee related inputs
p_payee_rec.Payee_ID := 'ipay-payee1';-- payee's ID
-- Payer related inputs
p_payer_rec.Payer_ID := 'ipay-cust1';-- payer's ID
p_payer_rec.Payer_Name := 'Cust1';-- Payer's (Customer's name)
-- Payment request operation related input
p_pmtreqtrxn_rec.PmtMode := 'ONLINE';-- Payment mode (Can be
--ONLINE/OFFLINE)
-- Tangible/Bill related inputs
p_tangible_rec.Tangible_ID := 'tangibleid1';-- Tangible ID / orderID
p_tangible_rec.Tangible_Amount := 25.50; -- Amount for the operation
p_tangible_rec.Currency_code := 'USD'; -- Currency for the operation
p_tangible_rec.RefInfo := 'test_refinfo3';
p_pmtreqtrxn_rec.Auth_Type := upper('authonly');-- request type
-- Payment instrument related inputs
p_pmtinstr_rec.CreditCardInstr.CC_Type := 'Visa';
-- payment instrument type
p_pmtinstr_rec.CreditCardInstr.CC_Num := '4111111111111111'
-- payment instrument number
p_pmtinstr_rec.CreditCardInstr.CC_ExpDate := to_char(sysdate+300);
-- payment instr. Expiration date
```

```
-- Risk related inputs
p_riskinfo_rec.Formula_Name := 'test3';-- Risk formula name
p_riskinfo_rec.ShipToBillTo_Flag := 'TRUE';
-- Flag showing if ship to address same as Bill to address
p_riskinfo_rec.Time_Of_Purchase := '08:45'-- Time of purchase
-- invoking the API
IBY_PAYMENT_ADAPTER_PUB.OraPmtReq(
    p_api_version,
    p_init_msg_list,
    p_commit,
    p_validation_level,
    p_ecapp_id,
    p_payee_rec,
    p_payer_rec,
    p_pmtinstr_rec,
    p_tangible_rec,
    p_pmtreqtrxn_rec,
    p_riskinfo_rec,
    x_return_status,
    x_msg_count,
    x_msg_data,
    x_reqresp_rec);
END;
-- After invoking the API, printing/interpreting the results
-- API status response
-- The status for the API. The value of this status has to be used to
-- find out whether the call was successful or not.
dbms_output.put_line('x_return_status = ' || x_return_status);
```

```
-- Payment Request Related Response. Printing Only If Status Is Success
    If(Char(X_Reqresp_Rec.Response.Status = 'S') Then
-- Offline Mode Related Response
    If P_Pmtreqtrxn_Rec.Pmtmode = 'OFFLINE' Then
        dbms_output.put_line('Transaction ID = ' || To_Char(X_Reqresp_
        Rec.Trxn_ID));
        dbms_output.put_line ('X_Reqresp_Rec.Offlineresp.Earliestsettlement_Date
        = ' || To_Char(X_Reqresp_Rec.Offlineresp.Earliestsettlement_Date));
        dbms_output.put_line( 'X_Reqresp_Rec.Offlineresp.Scheduled_Date = ' ||
        To_Char(X_Reqresp_Rec.Offlineresp.Scheduled_Date));
    Else
        dbms_output.put_line('Transaction ID = ' || To_Char(X_Reqresp_
        Rec.Trxn_ID));
        dbms_output.put_line('X_Reqresp_Rec.Authcode = ' || X_Reqresp_
        Rec.Authcode);
        dbms_output.put_line('X_Reqresp_Rec.Avscode = ' || X_Reqresp_
        Rec.Avscode);
        dbms_output.put_line('----------------------------------');
-- Risk Related Response
    If(X_Reqresp_Rec.Riskrespincluded = 'YES') Then
        dbms_output.put_line('---------------------------');
        dbms_output.put_line(' X_Reqresp_Rec.Riskresponse.Risk_Score=  '|| X_
        Reqresp_Rec.Riskresponse.Risk_Score );
        dbms_output.put_line( 'X_Reqresp_Rec.Riskresponse.Risk_Threshold_Val=
        '|| Reqresp_Rec.Riskresponse.Risk_Threshold_Val);
        Endif;
    Endif;
End If;
-- printing the error messages, if any from the API message list.
    for i in 1..x_msg_count loop
```

```
        dbms_output.put('msg # ' || to_char(i) || fnd_msg_pub.get(i) );
        dbms_output.new_line();
end loop;
EXCEPTION
    when others then
        dbms_output.put_line('In When others Exception');
        dbms_output.put_line('SQlerr is :' || substr(SQLERRM,1,200));
    end;
/
```

D

Back-End Processing APIs

Payment System Servlet API (SSL)

Topics in this section include:

Payment Servlet Overview

iPayment provides a set of APIs for interfacing with the payment system servlets, including APIs for authorization, capture, return, void, close batch, query batch status, and query transaction status. iPayment makes requests to these APIs using HTTP.

This section provides information to enable SSL payment system servlet developers (those who perform traditional credit-card processing) to create an interface for communication between iPayment and their payment systems. Also provided is the informationthat iPayment sends to payment system servlets, and the format and method of passing the data.

Payment System Servlet Development Prerequisites

Before you build a payment system servlet, you will need a basic understanding of iPayment. For additional information, see the latest version of *Oracle iPayment Concepts and Procedures* to get an understanding of iPayment and its architecture.

Test Payment System Servlet

After building a payment system servlet, complete the following steps:

1. Add the payment system to iPayment by following the steps of Creating a New Payment System in the latest version of *Oracle iPayment Concepts and Procedures Guide*.
2. Test and refine your servlet.

Payment System Servlet Operations

To perform the Payment System Servlet API operations, iPayment passes data to the payment system servlet in the form of HTTP name-value pairs.

Servlet Virtual Path Mapping

The following example shows the name-value pair format:

```
http://host name:port/servlet virtual path
?name-value pair(1)
&name-value pair(2)
&name-value pair(n)
&name-value pair(n+1)
...
```

where:

host name	The name of the computer where the payment system is located, for example, payment.com.
port	The listener's port number
servlet virtual path	The virtual path to the payment system servlet. This must always end in `oramipp_xxx`, where `xxx` is the three letter suffix chosen for this payment system.

Authorization API

When the payment system servlet receives the authorization request from iPayment, it formats the request into the payment system's native format and requests that the payment system perform an online authorization. When the payment system returns the authorization result, the payment system servlet will reformat the response into the iPayment's format.

Authorization API Input Name-Value Pairs

To perform the Authorization operation, use the following name value pairs:

Table D–1 Authorization API Input Name-Value Pairs

Name	Value
OapfAction	Value=oraauth
OapfOrderId	Order number for the transaction. OapfOrderId can contain only letters, numbers, dashes, underlines, and dots.
OapfCurr	ISO 4217 three-letter currency code. For example, usd (US Dollar).
OapfPrice	Transaction amount in the format prescribed for the three-letter ISO 4217 currency code
OapfAuthType	The authorization type for the transaction: AuthOnly or AuthCapture. ■ Use AuthOnly transactions when customers purchase "hard goods." The funds for these transactions are not captured until after the goods are shipped. ■ Use AuthCapture transactions when customers purchase "soft goods" such as software "downloadable" from a Web page. The funds for these transactions are authorized and captured at the same time.

Table D–1 Authorization API Input Name-Value Pairs

Name	Value
OapfPmtInstrID	Identification (card) number for the selected OapfPmtType
OapfPmtInstrExp	Expiration date for the selected OapfPmtType in the format MM/YY or MM/YYYY. The payment system servlet should be able to accept both formats.
OapfStoreId	Merchant or business identification. The maximum length is 80 characters. It may consist of Id and password in the following format: <StoreId>:<Password>
In addition to the values above the following name-value pairs are also required if AVS is required (except for OapfPhone, OapfEmail, and OapfCnty):	
OapfCustName	The customer's name
OapfAddr1	The customer's billing address (1st line). The portion of the address before city, state, and zip code.
OapfAddr2	The customer's billing address (2nd line). The portion of the address before city, state, and zip code.
OapfAddr3	The customer's billing address (3rd line). The portion of the address before city, state, and zip code.
OapfCity	The customer's city name for billing
OapfCnty	The customer's county name for billing
OapfState	The customer's state for billing
OapfCntry	The customer's country for billing
OapfPostalCode	The customer's zip code for billing
OapfPhone	The customer's telephone number
OapfEmail	The customer's e-mail address
OapfRetry	Specifies if this operation is a retry. Values include yes or no. If this flag is incorrectly turned on, then the servlet should attempt this transaction a second time as a non-retry transaction.
OapfNlsLang	(Optional.) Language and character-set information for the electronic commerce application. The format is the same as for the Oracle Server NLS_LANG environment variable.

Purchase Card Authorization API

The Purchase Card Authorization API is the same as the Authorization API, with the addition of a few parameters. To perform the Purchase Card Authorization operation, use name value pairs defined by the Authorization API, and the following name value pairs:

Table D–2 Authorization API Input Name-Value Pairs

Name	Value
OapfCommCard	The type of card being used for the transaction. Possible values are: ■ P for Purchase cards ■ C for Corporate cards ■ B for Business cards
OapfPONum	Purchase Order number
OapfTaxAmount	Tax amount
OapfShipToZip	The ZIP code to which merchandise is to be shipped
OapfShipFromZip	The ZIP code from which merchandise is to be shipped

Voice Authorization API

The Voice Authorization API is the same as the Authorization API or Purchase Card Authorization API, except that the value for OapfAction should be ‘oravoiceauth’ and a new field, OapfAuthCode is mandatory. To perform a Voice Authorization operation, use namevalue pairs defined in the Authorization API or Purchase Card Authorization API, with the following changes and additions.

Table D–3 Voice Authorization Input Name-Value Pairs

Name	Value
OapfAction	Value= oravoiceauth
OapfAuthCode	Authorization Code issued by the financial institution, when the voice authorization is done over the phone.

Authorization API Output Name-Value Pairs

Output served by the payment system to iPayment returns in the form of HTTP headers consisting of the following name-value pairs.

Table D–4 Authorization API Output Name-Value Pairs

Name	Value
OapfOrderId	Order number for the transaction. OapfOrderId can contain only letters, numbers, dashes, underlines, and dots.
OapfTrxnType	The transaction type from the payment system. See "Transaction Types" for a list of values.
OapfStatus	The transaction status. See "OapfStatus" for more information.
OapfAuthcode	The string for the authorization (approval) code.
OapfTrxnDate	The time stamp showing when the transaction is processed in YYYYMMDDHHMMSS format.
OapfPmtInstrType	The payment instrument type. For example, Visa or MasterCard.
OapfErrLocation	The error location. See "OapfErrLocation" for more information.
OapfVendErrCode	The payment system error code. See the payment system documentation for more information.
OapfVendErrmsg	The payment system error message. See the payment system documentation for more information.
The following name-value pairs are optional:	
OapfAcquirer	Name of the acquirer or bank
OapfRefcode	The retrieval reference number
OapfAVScode	The AVS code
OapfAuxMsg	Additional message from the processor
OapfNlsLang	Language and character-set information for the electronic commerce application. The format is the same as for the Oracle Server NLS_LANG environment variable.

Note: If an optional field does not have a value, do not include the optional field in the header.

Capture API

iPayment invokes the Capture API to perform online capture of previously authorized transactions.

Capture API Input Name-Value Pairs

To perform the Capture operation, use the following name-value pairs.

Table D–5 Capture API Input Name-Value Pairs

Name	Value
OapfAction	Value=oracapture.
OapfOrderId	Order number for the transaction. OapfOrderId can contain only letters, numbers, dashes, underlines, and dots.
OapfPrice	Transaction amount in the format prescribed for the three-letter ISO 4217 currency code.
OapfCurr	ISO 4217 three-letter currency code. For example, usd (US Dollar).
OapfStoreId	Merchant or business identification. The maximum length is 26 characters.
The following name-value pairs are optional:	
OapfRetry	Specifies if this operation is a retry. Values include yes or no.
OapfNlsLang	Language and character-set information for the electronic commerce application. The format is the same as for the Oracle Server NLS_LANG environment variable.

Capture API Output Name-Value Pairs

Output served by the payment system to iPayment returns in the form of HTTP headers consisting of the following name-value pairs.

Table D–6 Capture API Output Name-Value Pairs

Name	Value
OapfStatus	The transaction status. See "OapfStatus" for more information.
OapfTrxnType	The transaction type from the payment system. See "Transaction Types" for a list of values.
OapfTrxnDate	The time stamp for the time when the transaction is processed. This is in YYYYMMDDHHMMSS format.

Table D–6 Capture API Output Name-Value Pairs

Name	Value
OapfErrLocation	The error location. See "OapfErrLocation" for more information.
OapfVendErrCode	The payment system error code. See the payment system documentation for more information.
OapfVendErrmsg	The payment system error message. See the payment system documentation for more information.
The following name-value pairs are optional:	
OapfRefcode	The retrieval reference number.
OapfNlsLang	Language and character-set information for the electronic commerce application. The format is the same as for the Oracle Server NLS_LANG environment variable.

Capture API for Terminal-Based Merchant

For a terminal-based merchant, the Capture operation marks the transaction for capture in the local batch. If the operation completes successfully, it returns the following parameters:

OapfStatus Set to `0000`.

OapfTrxnType Set to `MarkCapture, 9`

OapfTrxnDate Set to the appropriate transaction date.

If the operation fails, it returns the following parameters:

- OapfStatus
- OapfTrxnType
- OapfTrxnDate
- OapfErrLocation
- OapfVendErrCode
- OapfVendErrmsg

Capture API for Host-Based Merchant

For a host-based merchant, the Capture operation communicates with the processor to capture the transaction. If the operation completes successfully, it returns the following parameters:

OapfStatus	Set to `0000`.
OapfTrxnType	Set to `MarkCapture, 8`
OapfTrxnDate	Set to the appropriate transaction date.
OapfRefcode	Set to the appropriate retrieval reference number

If the operation fails, it returns:

- OapfStatus
- OapfTrxnType
- OapfTrxnDate
- OapfErrLocation
- OapfVendErrCode

Void API

The Void API allows the merchant or business to void the following transaction types:

- Credit transactions
- Return transactions
- Capture transactions

The Void API voids the most recent transaction type for an order. For example, the merchant or business performs authorization--and later capture-- for a transaction. If the merchant or business performs a void on this order, the capture transaction is voided.

Void API Input Name-Value Pairs

To perform the Void operation, use the following name-value pairs:

Table D–7 Void API Input Name-Value Pairs

Name	Value
OapfAction	Value = oravoid.
OapfTrxnType	The transaction type to void from the payment system. See "Transaction Types" for a list of values.
OapfOrderId	Order number for the transaction. OapfOrderId can contain only letters numbers dashes underlines and dots.
OapfStoreId	Merchant or business identification. The maximum length is 26 characters.
The following name-value pairs are optional:	
OapfRetry	Specifies if this operation is a retry. Values include yes or no.
OapfNlsLang	Language and character-set information for the electronic commerce application. The format is the same as for the Oracle Server NLS_LANG environment variable.

Note: For a terminal-based merchant, the OapfTrxnType should be set to `MarkCapture (9)` or `MarkReturn (10)`. For a host-based merchant, the OapfTrxnType should be set to `Capture (8)` or `Return (5)`.

Void API Output Name-Value Pairs

Output served by the payment system to iPayment returns in the form of HTTP headers and consists of the following name-value pairs.

Table D–8 Void API Output Name-Value Pairs

Name	Value
OapfStatus	The transaction status. See "OapfStatus" for more information.
OapfTrxnDate	The time stamp for the time when the transaction is processed. This is in YYYYMMDDHHMMSS format.
OapfTrxnType	The transaction type from the payment system. See "Transaction Types" for a list of values.
OapfErrLocation	The error location. See "OapfErrLocation" for more information.
OapfVendErrCode	The payment system error code. See the payment system documentation for more information.
OapfVendErrmsg	The payment system error message. See the payment system documentation for more information.
The following name-value pairs are optional:	
OapfRefcode	The retrieval reference number.
OapfNlsLang	Language and character-set information for the electronic commerce application. The format is the same as for the Oracle Server NLS_LANG environment variable.

Void API for Terminal-Based Merchant

For a terminal-based merchant, the Void operation voids the transaction in the local batch. If the Void operation completes successfully, it returns the following parameters:

OapfStatus Set to `0000`.

OapfTrxnType Set to `VoidMarkCapture, 14` or `VoidMarkReturn, 18`

OapfTrxnDate Set to the appropriate transaction date.

If the operation fails, it returns the following parameters:

- OapfStatus
- OapfTrxnType

- OapfTrxnDate
- OapfErrLocation
- OapfVendErrCode
- OapfVendErrmsg

Void API for Host-Based Merchant

For a host-based merchant, the Void operation communicates with the processor to void the specified transaction. If the Void operation completes successfully, it returns the following parameters:

OapfStatus	Set to `0000`.
OapfTrxnType	Set to `VoidCapture, 13` or `VoidReturn, 17`
OapfTrxnDate	Set to the appropriate transaction date.
OapfRefcode	(Optional) Set to the appropriate retrieval reference number

If the operation fails, it returns:

- OapfStatus
- OapfTrxnType
- OapfTrxnDate
- OapfErrLocation
- OapfVendErrCode
- OapfVendErrMsg

Return/Credit API

The electronic commerce application invokes the Return / Credit API when goods are returned. If the authorization and capture transaction records still exist, the merchant or business will use the existing Order ID to perform a return. If there is no previous authorization or capture records, the merchant or business will create a new Order ID and provide the credit card information.

Return/Credit API Input Name-Value Pairs

To perform the Return / Credit operation, use the following name-value pairs:

Table D–9 Return/Credit API Input Name-Value Pairs

Name	Value
OapfAction	Value=orareturn
OapfOrderId	Order number for the transaction. OapfOrderId can contain only letters, numbers, dashes, underlines, and dots.
OapfPrice	Transaction amount in the format prescribed for the three-letter ISO 4217 currency code.
OapfCurr	ISO 4217 three-letter currency code. For example usd (US Dollar).
OapfPmtInstrID	Identification number (card number). OapfPmtInstrID will be supplied only for credits.
OapfPmtInstrExp	Expiration date for the selected OapfPmtType in the format MM/YY or MM/YYYY. OapfPmtInstrExp will be supplied only for credits.
OapfStoreId	Merchant or business identification. The maximum length is 26 characters.
The following name-value pairs are optional:	
OapfRetry	Specifies if this operation is a retry. Values include yes or no. If this flag is incorrectly turned on for a stand-alone retry (i.e., one which includes payment instrument information) the servlet should attempt this transaction a second time as a non-retry transaction.
OapfNlsLang	Language and character-set information for the electronic commerce application. The format is the same as for the Oracle Server NLS_LANG environment variable.

Return/Credit API Output Name-Value Pairs

Output served by the payment system to iPayment returns in the form of HTTP headers and consists of the following name-value pairs.

Table D–10 Return/Credit API Output Name-Value Pairs

Name	Value
OapfStatus	The transaction status. See "OapfStatus" for more information.
OapfTrxnType	The transaction type from the payment system. See "Transaction Types" for a list of values.

Table D–10 Return/Credit API Output Name-Value Pairs

Name	Value
OapfTrxnDate	The time stamp of when the transaction is processed. This is in YYYYMMDDHHMMSS format.
OapfPmtInstrType	The payment instrument type such as Visa or MasterCard
OapfErrLocation	The error location. See "OapfErrLocation" for more information.
OapfVendErrCode	The payment system error code. See the payment system documentation for more information.
OapfVendErrmsg	The payment system error message. See the payment system documentation for more information.
The following name-value pairs are optional:	
OapfRefcode	The retrieval reference number
OapfNlsLang	Language and character-set information for the electronic commerce application. The format is the same as for the Oracle Server NLS_LANG environment variable.

Return/Credit API for Terminal-Based Merchant

For a terminal-based merchant, the Return / Credit operation marks the transaction for return in the local batch. If the operation completes successfully, it returns the following parameters:

OapfStatus	Set to `0000`.
OapfTrxnType	Set to `MarkReturn, 10`
OapfTrxnDate	Set to the appropriate transaction date

If the operation fails, it returns the following parameters:

- OapfStatus
- OapfTrxnType
- OapfTrxnDate
- OapfErrLocation
- OapfVendErrCode
- OapfVendErrmsg

Return/Credit API for Host-Based Merchant

For a host-based merchant, the Return / Credit operation communicates with the processor to return / credit the transaction. If the operation completes successfully, it returns the following parameters:

OapfStatus	Set to `0000`.
OapfTrxnType	Set to `Return, 5`
OapfTrxnDate	Set to the appropriate transaction date.
OapfPmtInstrType	(Optional) Set to the appropriate payment instrument type
OapfRefcode	(Optional) Set to the appropriate retrieval reference number

If the operation fails, it returns the following parameters:

- OapfStatus
- OapfTrxnType
- OapfTrxnDate
- OapfErrLocation
- OapfVendErrCode
- OapfVendErrmsg

Close Batch API

The merchant or business uses the Close Batch API to close a batch of previously performed transactions. The transaction types that can be included in a close batch are:

- Capture transactions
- Return / Credit transactions

Close Batch API Input Name-Value Pairs

To perform this operation you need the following parameters (name-value pairs):

Table D–11 Close Batch API Input Name-Value Pairs

Name	Value
OapfAction	Value=oraclosebatch

Table D–11 Close Batch API Input Name-Value Pairs

Name	Value
OapfStoreId	Merchant or business identification. The maximum length is 26 characters.
The following name-value pairs are optional:	
OapfRetry	Specifies if this operation is a retry. Values include yes or no.
OapfVpsBatchID	The payment system batch identification
OapfNlsLang	Language and character-set information for the electronic commerce application. The format is the same as for the Oracle Server NLS_LANG environment variable.

Close Batch API Output Name-Value Pairs

Output served by the payment system to iPayment returns in the form of HTTP headers and consists of the following name-value pairs:

Table D–12 Close Batch API Output Name-Value Pairs

Name	Value
OapfStatus	The transaction status. See "OapfStatus" for more information.
OapfBatchDate	The date for this batch
OapfCreditAmount	The credit amount. This is the total outflow including return/credit and void.
OapfSalesAmount	The total amount captured
OapfBatchTotal	The total amount in this batch
OapfCurr	ISO 4217 three-letter currency code. For example, usd (US Dollar).
OapfNumTrxns	The number of transactions in this batch
OapfStoreID	Merchant or business identification. The maximum length is 26 characters.
OapfVpsBatchID	The payment system batch identification
OapfGWBatchID	The gateway batch identification
OapfBatchState	State of the batch. For example, sent, queued, accept, etc. See "OapfBatchState" for more information.
OapfErrLocation	The error location. See "OapfErrLocation" for more information.

Table D–12 Close Batch API Output Name-Value Pairs

Name	Value
OapfVendErrCode	The payment system error code. See the payment system documentation for more information.
OapfVendErrmsg	The payment system error message. See the payment system documentation for more information.
OapfNlsLang	(Optional) Language and character-set information for the electronic commerce application. The format is the same as for the Oracle Server NLS_LANG environment variable.

Close Batch API Additional Output

Additional output for the Close Batch API includes the status of individual transactions. This output differs based on transaction type. The Capture and Return / Credit transaction types return the following parameters:

- OapfOrderId-count=<>
- OapfTrxnType-count=<>
- OapfStatus-count=<>
- OapfErrLocation-count=<>
- OapfVendCode-count=<>
- OapfVendErrmsg-count=<>

> **Note:** OapfErrLocation, OapfVendCode, and OapfVendErrmsg are only returned if the OapfStatus field is non-zero. They are returned when there is some failure for the Order ID during batch close.

The OapfNumTrxns field indicates the number of transactions included in the batch. Each output name-value pair should be appended with a counter to indicate to which transaction it belongs. The counter should start from 0. For example, assume there are two transactions in a batch. The output of this batch is:

```
OapfVpsBatchID: 1234
OapfStatus: PMT-0000
OapfBatchDate: 19970918091000
OapfCreditAmount: 10.00
OapfSalesAmount: 20.00
OapfBatchTotal: 10.00
```

```
OapfCurr: usd
OapfNumTrxns: 2
OapfStoreID: abcd
OapfGWBatchID: 5678

OapfOrderId-0=1111
OapfTrxnType-0=8
OapfStatus-0=0000

OapfOrderId-1=2222
OapfTrxnType-1=5
OapfStatus-1=0000
```

Note: The OapfTrxnType should be set to `Capture (8)` or `Return (5)`.

Close Batch API for Terminal-Based Merchant

For a terminal-based merchant, this operation attempts to close out an open batch and cause funds to change hands. If the batch closes successfully, batch summary as well as transaction details should be returned. If the close batch fails, the merchant or business, optionally, fixes offending transactions in the batch and retries. For payment systems that implement retry logic, use OapfRetry and OapfVpsBatchID for retry. For payment systems that do not include retry logic, this operation attempts to close out the existing open batch again.

Close Batch API for Host-Based Merchant

For a host-based merchant, if you use the auto close option, this operation returns OapfStatus=0000. If you use the manual close option, the payment system sends the total to the processor. The processor checks against its total and closes the batch. If the batch closes successfully, OapfStatus should be set to 0000 and OapfBatchTotal should be returned. If batch does not close successfully, error messages are returned in OapfStatus and optionally in OapfErrLocation, OapfVendErrCode, and OapfVendErrmsg.

Query Transaction Status API

The merchant or business uses the Query Transaction Status API to query the status of a transaction. Both the iPayment database and the payment system database maintain a record of completed transactions, and these databases may become out of synch due to a communication link breakdown. Similarly, the electronic commerce application database and the iPayment database may become out of synch due to a similar condition. This API returns all existing records for a particular Order ID on a payment system.

Query Transaction Status API Input Name-Value Pairs

To perform this operation, use the following name-value pairs.

Table D–13 Query Transaction Status API Input Name-Value Pairs

Name	Value
OapfAction	Value=oraqrytxstatus
OapfOrderId	Order ID to query
OapfStoreId	Merchant or business identification. The maximum length is 26 characters.
OapfNlsLang	(Optional) Language and character-set information for the electronic commerce application. The format is the same as for the Oracle Server NLS_LANG environment variable.

Query Transaction Status API Output Name-Value Pairs

Output from the Query Transaction Status API may consist of multiple records for the same Order ID, depending on the transaction type. OapfNumTrxns provides the number of transactions for this Order ID. The output for various transaction types includes the following parameters:

Auth / AuthCapture:

```
OapfOrderId-count=<>
OapfTrxnType-count=<>
OapfStatus-count=<>
OapfPrice-count=<>
OapfCurr-count=<>
OapfAuthcode-count=<>
OapfRefcode-count=<>
OapfAVScode-count=<>
OapfTrxnDate-count=<>
OapfPmtInstrType-count=<>
```

```
OapfErrLocation-count=<>
OapfVendCode-count=<>
OapfVendErrmsg-count=<>
OapfAcquirer-count=<>
OapfAuxMsg-count=<>
```

Capture:

```
OapfOrderId-count=<>
OapfTrxnType-count=<>
OapfStatus-count=<>
OapfPrice-count=<>
OapfPrice-count=<>
OapfCurr-count=<>
OapfTrxnDate-count=<>
OapfRefcode-count=<>
OapfVpsBatchID-count=<>
OapfErrLocation-count=<>
OapfVendCode-count=<>
OapfVendErrmsg-count=<>
```

Credit/Return:

```
OapfOrderId-count=<>
OapfTrxnType-count=<>
OapfStatus-count=<>
OapfPrice-count=<>
OapfCurr-count=<>
OapfTrxnDate-count=<>
OapfPmtInstrType-count=<>
OapfRefcode-count=<>
OapfVpsBatchID-count=<>
OapfErrLocation-count=<>
OapfVendCode-count=<>
OapfVendErrmsg-count=<>
OapfAuxMsg-count=<> (optional)
```

Void:

```
OapfOrderId-count=<>
OapfTrxnType-count=<>
OapfStatus-count=<>
OapfTrxnDate-count=<>
OapfRefcode-count=<>
OapfErrLocation-count=<>
OapfVendCode-count=<>
```

```
OapfVendErrmsg-count=<>
OapfAuxMsg-count=<>
```

Query Batch Status API

The merchant or business uses the Query Batch Status API to query the status of an existing batch. Terminal-based merchants also use the Query Batch Status API to verify the transactions for submission to batch close by iPayment. The merchant or business can use the output from the Query Batch Status API to cross-check the transaction records in the merchant or business database.

Query Batch Status API Input Name-Value Pairs

To perform the Query Batch Status operation, use the following name-value pairs:

Table D–14 Query Batch Status API Input Name-Value Pairs

Name	Value
OapfAction	Value=oraqrybatchstatus
OapfVpsBatchID	The payment system batch identification if querying for an existing batch. If a value is not included, the output is pending batch transactions.
OapfStoreId	Merchant or business identification. The maximum length is 26 characters.
OapfNlsLang	(Optional) Language and character-set information for the electronic commerce application. The format is the same as for the Oracle Server NLS_LANG environment variable.

Query Batch Status API Output Name-Value Pairs

Output from the Query Batch Status API is similar to the output of the Close Batch API when you provide the OapfVpsBatchID. When you do not provide the OapfVpsBatchID, the output is all transactions for the terminal-based merchant for a subsequent batch close. OapfNumTrxns provides the number of transactions for the batch. The output for transaction types includes the following parameters:

Capture, Return, Credit:

```
OapfOrderId-count=<>
OapfTrxnType-count=<>
OapfPrice-count=<>
OapfCurr-count=<>
```

```
OapfTrxnDate-count=<>
```

Transaction Status and Messages

This section describes the various transaction status codes and error messages returned by iPayment payment system servlet.

Topics include:

- OapfStatus
- OapfErrLocation
- OapfVendErrCode
- OapfVendErrmsg
- OapfBatchState
- OapfOrderId

OapfStatus

Each transaction (including authorize, capture, return, credit, and void) returns the status in the OapfStatus field. A value of 0000 or 0 indicates a successfully completed transaction. A non-zero value indicates that the transaction failed. OapfErrLocation, OapfVendErrCode, and OapfVendErrmsg provide additional error information.

SSL Payment System Servlet

SSL payment systems must return the following values to iPayment in the OapfStatus parameter:

Table D–15 OapfStatus Values

Value	Definition
0000	Transaction completed successfully
0001	Communications error: the payment system or the processor is out of reach. You should resubmit the request at a later time.
0002	Duplicate Order ID
0003	Duplicate Batch ID
0004	Mandatory fields are required.

Table D–15 OapfStatus Values

Value	Definition
0005	Payment system specific error. Refer to OapfVendErrCode and OapfVendErrmsg for more information.
0006	Batch partially succeeded. Some transactions in the batch failed and some processed correctly.
0007	The batch failed. You should correct the problem and resubmit the batch.
0008	Requested action not supported
0017	Card has insufficient funds
0019	Invalid credit card

OapfErrLocation

The OapfErrLocation parameter contains the following values:

Table D–16 OapfErrLocation Values

Value	Definition
0	Transaction completed successfully at all levels
1	Transaction failed at the payment system cartridge code
2	Transaction failed at the payment system engine or the payment system server code
3	Transaction failed at the payment system gateway or equivalent to the interface that communicates with the bank
4	Transaction failed at the acquirer bank gateway or equivalent to the bank interface that communicates with the payment system interface
5	Transaction failed at the payment system
6	Transaction failed at iPayment

OapfVendErrCode

OapfVendErrCode contains the payment system's error code. See the documentation that came with the payment system for more information. This parameter is required only if the transaction failed at the payment system.

OapfVendErrmsg

OapfVendErrmsg contains the payment system's message for the error. See the documentation that came with the payment system for more information. This parameter is required only if the transaction failed at the payment system.

OapfBatchState

The OapfBatchState parameter indicates the state of the batch based on the processor. If the state is set to "sent," the merchant needs to query the batch again to find out if the batch is accepted and also to retrieve transaction details.

The OapfBatchState parameter contains the following values:

Table D–17 OapfBatchState Values

Value	Definition
0	Batch accepted
1	Batch sent
2	Batch queued
3	Batch rejected.
4	Batch processed.
5	Batch error
6	Batch not found
7	Batch unknown

Note: The close batch operation returns its status in OapfStatus, and has the following possible values: 0000, 0003, 0006, and 0007. See "OapfStatus" for more information.

OapfOrderId

iPayment uses the Order ID to uniquely identify each transaction. In the Core API, if the merchant tries to authorize a previously authorized transaction, the payment system will not accept the authorization. The payment system returns the status "Duplicate Order ID."

How iPayment Uses OapfNlsLang

If the electronic commerce application does not pass the OapfNlsLang parameter, iPayment passes information from the electronic commerce application to the payment service cartridge without performing any conversion of character sets.

If the commerce application does pass a value for OapfNlsLang to iPayment, iPayment tries to convert parameters based on the value of OapfNlsLang before sending those parameters to the payment system cartridge.

To do so, iPayment first checks its database for the list of preferred and optional languages for that payment system. (The information in the database reflects what the iPayment administrator entered using the iPayment Administration user interface.)

Secondly, iPayment does one of the following, depending on what it finds in the database:

- If the database lists a language that matches the value of OapfNlsLang, iPayment keeps the value of OapfNlsLang and passes it to the payment system cartridge.
- If the database does not list a language matching the value of OapfNlsLang, iPayment uses the language specified as the preferred language for that payment system, thus changing the value of OapfNlsLang before sending it to the payment system cartridge.

Finally, iPayment converts the values of other parameters so that they are sent to the payment system cartridge in the language specified by OapfNlsLang.

Notice that this conversion process works in only one direction: from the electronic commerce application to the payment system cartridge. If the payment system sets OapfNlsLang when it sends the data back, iPayment uses that information only to store the value of OapfVendErrmsg in its database. iPayment does not convert data sent from the payment system cartridge back to the electronic commerce application.

Format of the NLS_LANG Parameter

The value of this parameter follows the same format as Oracle Server's NLS_LANG environment variable:

```
language_territory.charset
```

For example, JAPANESE_JAPAN.JA16EUC is a valid value for OapfNlsLang.

Transaction Types

This section defines the values for OapfTrxnType and includes a discussion of transaction states.

OapfTrxnType: SSL Transactions and Commerce Applications

iPayment returns OapfTrxnType transaction types for the SSL payment system servlet API:

Table D–18 OapfTrxnType Transaction Types (SSL)

Value	Type	Definition
2	AuthOnly	An authorization only requested for an order.
3	AuthCapture	An online authorization and capture for an order.
4	VoidAuthOnly	Void of an order that was successfully authorized but not captured. (Electronic Commerce application API only.)
5	Return	Perform a return or credit on an order that was successfully authorized and captured online.
6	ECRefund	Perform a refund on an electronic cash / coin purchase.
7	VoidAuthCapture	Void a previous authorization and capture online.
8	Capture	Capture performed by a host-based or a terminal-based (closed batch) processor system.
9	MarkCapture	Transaction that was marked for capture by a terminal-based processor system.
10	MarkReturn	Transaction that was marked for return by a terminal-based processor system.
13	VoidCapture	Void a transaction captured by a host-based or terminal-based (close batch) processor system.
14	VoidMarkCapture	Void a transaction marked for capture by a terminal-based processor system.
17	VoidReturn	Void a transaction that was returned by a host-based or terminal-based (close batch) processor system.
18	VoidMarkReturn	Void a transaction that was marked for return by a terminal-based system.
101	SplitAuth	A subsequent authorization (Electronic Commerce application API only.)

E

Extensibility

Overview

Extensibility allows interaction between iPayment and a back end payment system to be customized. By implementing the interface `oracle.apps.iby.extend.TxnCustomizer`

Custom parameters may be added to those sent by iPayment before the BEP servlet is contacted. After the BEP servlet responds, the extensibility implementation may take custom parameters that are returned in the response and store them in the database.

Implementation

The Extensibility Interface

To implement extensibility, the Java interface `oracle.apps.iby.extend.TxnCustomizer` must be implemented as class

`ibyextend.TxnCustomizer_<ECAPP ID>.`

`<ECAPP ID>` is the numerical ID of the electronic commerce application that will use extensibility.

The `oracle.apps.iby.extend.TxnCustomizer` interface has the following methods:

- **public void preTxn** (String bep, Connection dbconn, AddOnlyHashtable txn_req) throws PSException;
- **public void postTxn** (String bep, Connection dbconn, ReadOnlyHashtable txn_resp) throws PSException;

The parameter bep is the three letter suffix , which is specified during registration in the user interface, of the BEP that the request goes to, dbconn is a connection open to the APPS schema, and txn_req/txn_resp are collections of name-value pairs which represent, respectively, the BEP request/response.

Note: Both methods can throw a PSException. This allows a transaction to be aborted if a critical error, for example, SQLException, occurs in the extensibility implementation class. Releasing the database connection passed to both methods is the responsibility of iPayment and should not be done by the extensibility class.

ReadOnlyHashtable, AddOnlyHashtable Classes

The classes oracle.apps.iby.util.AddOnlyHashtable and oracle.apps.iby.util.ReadOnlyHashtable are passed as parameters to the preTxn, postTxn methods respectively. ReadOnlyHashtable has the following methods, which are the same in signature and behavior as the corresponding methods of the Java Hashtable class:

```
keys, containsKey, isEmpty, size, get
```

AddOnlyHashtable, which is a subclass of **ReadOnlyHashtable**, has the additional method put. It differs from the corresponding method in the Java Hashtable class in the way that only keys not already present in the hashtable can be successfully used for insertions. The **AddOnlyHashtable** version of put returns a boolean value which is true only if the insertion succeeds.

Both types of hashtables are populated with String name-value pairs from one of the BEP APIs. In the case of preTxn, these are input name-value pairs. In the case of postTxn, these are output name-value pairs. Below is a piece of sample code illustrating how a value is retrieved:

```
String orderId = (String)txn_resp.get("OapfOrderId");
```

See the Back-End Processing APIs section for a complete listing of all names.

Custom Fields

Custom fields should be prefixed by OapfExtend, which is defined as the constant CUSTOMFIELD_PREFIX in the oracle.apps.iby.extend.TxnCustomizer class. This applies to both fields inserted in the BEP request during the call to

preTxn , and the custom fields returned by the BEP servlet and processed in postTxn. If custom fields do not follow this convention, there is no guarantee that custom fields will be successfully passed through.

Development, Deployment

To develop extensibility classes, include the location of the APPS.ZIP file containing all of iPayment's classes in the CLASSPATH passed to the compiler.

An extensibility class is deployed by placing it in iPayment's CLASSPATH. Please refer to the local JServ configuration to determine this value.

Note: Since extensibility classes are part of the ibyextend package, the class must be located under a directory called ibyextend.

Exceptions

An exception may be thrown by either the preTxn or postTxn method in the TxnCustomizer class. This exception is the classs oracle.apps.iby.exception.PSException

It should be thrown whenever a critical error is encountered in the customizer and the transaction needs to be aborted.

iPayment will take the exception thrown by an extensibility implementation and throw a new PSException based on it with the following error code:

IBY_0005

The message in the new PSException will have a prefix appended to it, indicating that the error occured within the extensibility class.

Sample Implementation

```
package ibyextend;

import java.sql.*;
import java.util.Hashtable;
import java.util.Enumeration;

import oracle.apps.iby.extend.TxnCustomizer;
import oracle.apps.iby.util.AddOnlyHashtable;
import oracle.apps.iby.util.ReadOnlyHashtable;
```

```
import oracle.apps.iby.exception.PSException;

public class TxnCustomizer_673 implements TxnCustomizer
{

    static final String EXTEND_QUERY="select a, b from
iby.iby_extend_pre where order_id = ?";

    static final String EXTEND_INSERT="insert into iby.iby_extend_post
values (?,?,?)";

   public void preTxn(String bep, Connection dbconn, AddOnlyHashtable
                      inputs) throws PSException
    { String orderId=(String)inputs.get("OapfOrderId");

      try
          { PreparedStatement
                stmnt=dbconn.prepareStatement(EXTEND_TESTQUERY);
           stmnt.setString(1,orderId);
           ResultSet rset=stmnt.executeQuery();

           for (int count=1; rset.next(); count++)
               {
                 String cust1=rset.getString(1),
                     cust2=rset.getString(2);
                inputs.put( TxnCustomizer.CUSTOMFIELD_PREFIX
+
"ReqA-"+count,cust1);
                inputs.put( TxnCustomizer.CUSTOMFIELD_PREFIX
+
"ReqB-"+count,cust2);
               }
           rset.close();
           stmnt.close();
           // !! do not close the database connection !!
          }
      catch (SQLException sqle)
          { throw new PSException("IBY_0005",sqle.getMessage(),false); }
    }

    public void postTxn(String bep, Connection dbconn,
                        ReadOnlyHashtable outputs) throws PSException
    { String f1=(String)outputs.get("OapfStatus"),

f2=(String)outputs.get(TxnCustomizer.CUSTOMFIELD_PREFIX+"Resp"),
```

```
            f3=(String)outputs.get("OapfTrxnDate");
        try
            { PreparedStatement

stmnt=dbconn.prepareStatement(EXTEND_TESTINSERT);
              stmnt.setString(1,f1);
              stmnt.setString(2,f2);
              stmnt.setString(3,f3);
              stmnt.executeUpdate();
              dbconn.commit();
              stmnt.close();
              // !! do not close the database connection !!
            }
        catch (SQLException sqle)
            { throw new PSException("IBY_0005",sqle.getMessage(),false); }
    }
}
```