

ClearCommerce Software
Barclaycard Payment Reference
5.9

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Documentation

The documentation for this product is also available in softcopy format in the installation package.

The softcopy documentation is provided in .pdf format, and may be viewed or printed using Adobe Acrobat Reader. If you do not have Adobe Acrobat Reader installed on your system, you can download the correct version for your platform from the following Web site:

<http://www.adobe.com/prodindex/acrobat/readstep.html>

Install Acrobat Reader 6.0 or later for best viewing results and print to a PostScript Level 2 (or higher) printer for best printing results.

Refer to the Release Notes for late additions, corrections, and revisions to the documentation.

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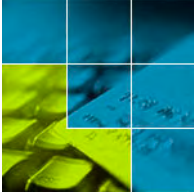


Table of Contents

About This Manual	ix
Audience	ix
Contents	ix
Highlighting and Notes	x
Product Documentation	xi
Online Resources	xiii
Chapter 1. Barclaycard Payment Solution	1
Payment Processing	1
Payment Components	3
Capabilities of Barclaycard	5
Communication Methods	7
Multithreading Capabilities	8
Cards Supported	8
Currencies Supported	8
Payer Authentication Support	9
Periodic Billing Capability (recurring only)	9
Data Capture Levels	10
Visa Global Invoice Specification (VGIS)	11
Address Verification Service (AVS)	12
Card Verification Method (CVM)	12
Settlement Type	13
Transaction Type Support	13
Primary	14
Secondary	16
Settlement	20

Chapter 2. Payment Configuration	23
Component Configuration	24
Processor Configuration	27
Bulk Settlement Configuration	27
Bulk Settlement Processor Configuration.....	28
Bulk Settlement Scheduler Configuration	28
Store Creation	29
Currency Configuration	30
Store-Level Payment Configuration	31
Payment Routing.....	31
Processor Configuration - Store.....	31
Settlement Scheduler Configuration	33
Chapter 3. Payment Testing.....	35
Test Components	35
Payment Simulator Component	36
Chapter 4. Authorization with Barclaycard.....	37
Authorization Process Flow	37
Authorization Input.....	38
POS Characteristics	49
CardholderPresentCode	50
SecurityIndicator.....	51
TerminalInput Capability.....	52
Authorization Responses	53
Processor Codes and Messages.....	54
AVS Responses.....	56
CVM Responses	57
Engine Log.....	58
Order Reports.....	58
Chapter 5. Settlement with Barclaycard.....	59
Settlement Process	60
Settlement Input.....	61
Settlement Responses	61
Engine Log.....	61

Settlement Summary	62
Settlement Reports	63
Settlement Problems	64
Resubmitting Failed Settlement Files	64

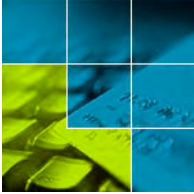
Chapter 6. Implementing VGIS..... 65

Getting Started	65
VGIS Transactions and the ClearCommerce Engine	66
VGIS Related Documentation	66
Supported and Unsupported Functionality	67
Card Types and Payment Methods	67
Barclaycard Processor Interface	67
Industry Types	67
Currencies	68
VGIS Invoice Treatment.....	68
Tax Function	68
Tax Type	68
Tax Category.....	68
Tax Treatment Support	68
VGIS Party Type Support.....	69
Discount Treatment Support.....	69
VGIS Part Number Support.....	69
Transaction Line Item Support	70
Enabling VGIS.....	70
Enabling VGIS Using the Store Administration Tool	71
Enabling VGIS Using a ConfigDoc.....	72

Chapter 7. Engine API..... 73

Document Routing	73
Component Configuration	74
Processor Configuration	78

Appendix A. Country Codes	81
Appendix B. Digital Receipts	93
Appendix C. Currency Codes.....	95
Glossary	101
Index.....	129



About This Manual

This manual explains setting up, configuring, and managing payment processing with Barclaycard through the ClearCommerce® Engine.

Audience

This reference manual is for system administrators, integrators, and account administrators who set up merchants to use the Barclaycard processor. Knowledge about payment processing, computers, and the Internet is useful to understand the information in this manual.

Contents

This manual includes the following information:

Chapter 1, “Barclaycard Payment Solution,” which provides an overview of the Barclaycard payment solution and features.

Chapter 2, “Payment Configuration,” which provides component and store setup information.

Chapter 3, “Payment Testing,” which describes the testing and payment simulator components.

Chapter 4, “Authorization with Barclaycard,” which provides a description of the Barclaycard authorization process.

Chapter 5, “Settlement with Barclaycard,” which provides a description of the Barclaycard settlement process.

Chapter 6, “Implementing VGIS,” which documents how the Visa Global XML Invoice Specification has been implemented at Barclaycard.

Chapter 7, “Engine API,” which includes API information specific to the Barclaycard processor.

Appendix A, “Country Codes,” which lists the 3-digit country codes that are required to ship an order to the U.S. or abroad.

Appendix B, “Digital Receipts,” which provides information on the Barclaycard Digital Receipt template.

Appendix C, “Currency Codes,” which lists the currencies supported by the ClearCommerce Engine.

A glossary, which defines terminology that is specific to e-commerce, the Internet, transaction processing, and the ClearCommerce Engine.

Highlighting and Notes

The following highlighting styles are used in this manual:

- **Bold** indicates commands, command-line options, and interface controls, such as the names of icons, menus, menu items, buttons, check boxes, and tabs.
- *Italic* indicates variables that you must replace with a value. It also indicates book titles and emphasized terms.
- `Monospace` indicates file names and code examples.

The following note styles are used in this manual:

Note: Information that further explains a concept or instruction in the main text.

Important: Information that you might overlook within the main text and that is essential for the completion of a task.

Caution: Information that either alerts you or tells you how to avoid a potential loss of data or a system failure.

Product Documentation

The documentation in the ClearCommerce software product library includes printed manuals, softcopy manuals, and HTML help systems. The softcopy manuals (in .pdf format) are packaged with the products, either in the installation image or on a separate CD. The HTML Help systems can be accessed from each page of the browser-based Store Administrator Tool, System Administrator Tool, and Account Administrator (CSP) Tool.

The product library includes the documents that are described in the following table.

Documentation	Description
<i>Store Administrator Guide</i>	General reference information about ClearCommerce Engine. How-to information about setting up, configuring, and managing an online store that is hosted using ClearCommerce Engine.
Online Help for the Store Administrator Tool	How-to information about performing configuration and management tasks using the Store Administrator Tool. To access Help, click the Help link from any page of the Store Administrator Tool.
<i>Risk Manager Guide</i>	Reference and how-to information about using EFD's ClearCommerce® FraudShield® to protect against fraudulent orders.
<i>System Administrator Guide</i>	How-to information about performing configuration, management, and administration tasks.
Online Help for the System Administrator Tool	How-to information about performing configuration, management, and administration tasks using the System Administrator Tool. To access Help, click the Help link from any page of the System Administrator Tool.
<i>Installation Guide</i>	How-to information about installing ClearCommerce software, including pre-installation requirements and post-installation verification.
Payment References	Payment processor reference information focusing on authorization and settlement using EFD's ClearCommerce PaymentDirector™ software.

Documentation	Description
<i>Account Administrator (CSP) Guide</i>	How-to information about performing administration tasks.
Online Help for the Account Administrator (CSP) Tool	How-to information about performing configuration, management, and administration tasks using the Account Administrator (CSP) Tool. To access Help, click the Help link from any page of the Account Administrator Tool.
<i>ClearCommerce Engine API Reference and Guide</i>	Reference and how-to information about using the ClearCommerce Engine API to construct documents for sending information to and retrieving information from the ClearCommerce Engine.
<i>Document Hierarchy Reference</i>	Reference information about data that can be contained in ConfigDocs, OrderFormDocs, and ReportDocs. This is a three-volume set.
<i>Using the XML Input Component</i>	Reference and how-to information about using the XML input component.
Javadocs	Reference information about the Java classes that are available through the Java ClearCommerce Engine Application Programming Interface (API).

Each document is designed for specific types of users:

- Store administrators—responsible for managing an online store’s e-commerce activity; sometimes referred to as merchants.
- Risk managers—responsible for managing risk or monitoring potentially fraudulent activity for an online store.
- System administrators—responsible for administering all Engine-level activities, including ensuring successful communication with payment processors, and monitoring server performance.

- Account administrators—responsible for administering merchant account activities, including setting up merchants and managing user IDs and permissions. Frequently, a commerce service provider (CSP) acts as an account administrator.
- Integrators—responsible for integrating ClearCommerce software with applications from which the transactions originate, such as an online store’s electronic storefront or a call center or to other business systems, such as fulfillment, inventory, or accounting applications.

Online Resources

The following online resources are available.

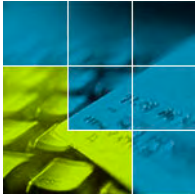
Developer Support Site

Additional documentation and tutorials are available on the Web. If you are a developer who is integrating the ClearCommerce Engine with an online store or other card-not-present application, be sure to visit eFunds Retail Solutions’ ClearCommerce Software Developer Support Site:

`http://devsupport.clearcommerce.com`

You will need a user name and password (available from Customer Support) to log on.

About This Manual



Chapter 1

Barclaycard Payment Solution

eFund's ClearCommerce applications (ClearCommerce PaymentDirector™ and ClearCommerce FraudShield) share a common code base in the ClearCommerce Engine. The ClearCommerce Engine supports e-commerce Web sites and other card-not-present applications. The Engine also enables commerce service providers (CSPs) to provide Internet commerce services to small and large businesses.

Online payment processing involves customers submitting credit card or other forms of payment information on your Web site and then the *authorization* and *settlement* of transactions through external processing services known as payment processors. One of the payment processors that can be used with the ClearCommerce Engine is Barclaycard.

Consult with your merchant bank to determine which card processor is appropriate for you to use.

Payment Processing

Payment processing is part of the overall transaction process. The following figures and list of steps describe authorization (steps 2 and 3) and settlement (steps 4 and 5) for a typical transaction.

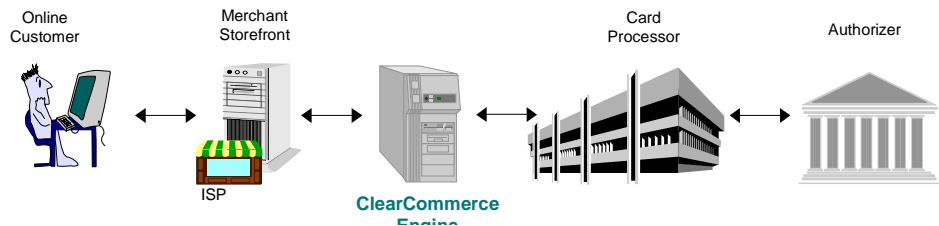


Figure 1-1 Authorization process

- 1** An order enters the ClearCommerce Engine.
If the order is for a product that must be physically shipped, the order is a PreAuth transaction.
If the order is for a product that is delivered immediately, the order is an Auth transaction.
- 2** The PreAuth or Auth transaction is sent to the card processor, and subsequently to the card-issuing authority for approval.
- 3** When a PreAuth is approved, a hold for the transaction total is placed on the cardholder's open-to-buy balance. When the product is shipped, the merchant initiates a PostAuth transaction that marks the transaction as captured and ready for settlement.
If the Auth is approved, the transaction is automatically marked as captured and is ready for settlement.
- 4** A Settle transaction is initiated by the store administrator. Transactions in the batch are marked Bulk Pending so that they are included the next time the account administrator initiates bulk settlement with Barclaycard.
- 5** When the account administrator initiates bulk settlement the process of transferring funds to the merchant's account begins. In the case of a credit, the funds are transferred from the merchant's account.

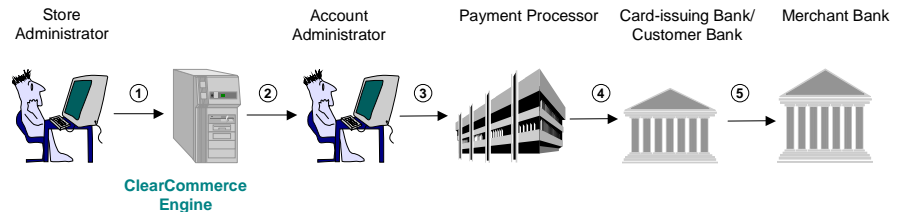


Figure 1-2 Settlement process

Information about these transaction types and the other transaction types that are supported by Barclaycard and the ClearCommerce Engine is provided in “Transaction Type Support” on page 13.

For a description of the authorization process, refer to Chapter 4, “Authorization with Barclaycard” on page 37.

For a description of the settlement process, refer to Chapter 5, “Settlement with Barclaycard” on page 59.

Payment Components

The ClearCommerce Engine consists of many components, which are described in the *System Administrator Guide*. Some of these components are collectively referred to as the Payment components.

The Payment components are responsible for the logical tasks associated with payment transaction processing. The logical tasks include configuration, routing, data verification, and performing common business logic.

There are four components for the Barclaycard payment processor. The components responsible for authorization are CcxBarclaysMcAuth and CcxBarclaysGbpAuth. For settlement, the components are CcxBarclaysMcSettle and CcxBarclaysGbpSettle.

The Barclaycard Great Britain Pound (GBP) processor supports MasterCard, Visa, JCB, Maestro, UK Maestro, Solo, and Electron transactions in British Pounds. The Barclaycard Multiple Currency (MC) processor supports Visa, MasterCard, Maestro, and Electron transactions in British Pounds and other currencies. Transactions are routed to the appropriate Barclaycard processor based on the card type used.

The Auth and Settle components must be configured before they can be used. For information on configuring the Payment components, refer to Chapter 2, “Payment Configuration.”

For authorization, the ClearCommerce Engine manages connections with Barclaycard through an external device, usually a router, which performs bi-directional translation between TCP/IP and X.25. The settle components send bulk batches for settlement by FTP.

Figure 3 on page 4 shows the authorization and the settle components among the other Payment components. It also shows the interaction of these components with the card processor, the card-issuing banks or organizations, which are collectively referred to as an issuing authority, and the rest of the ClearCommerce Engine architecture.

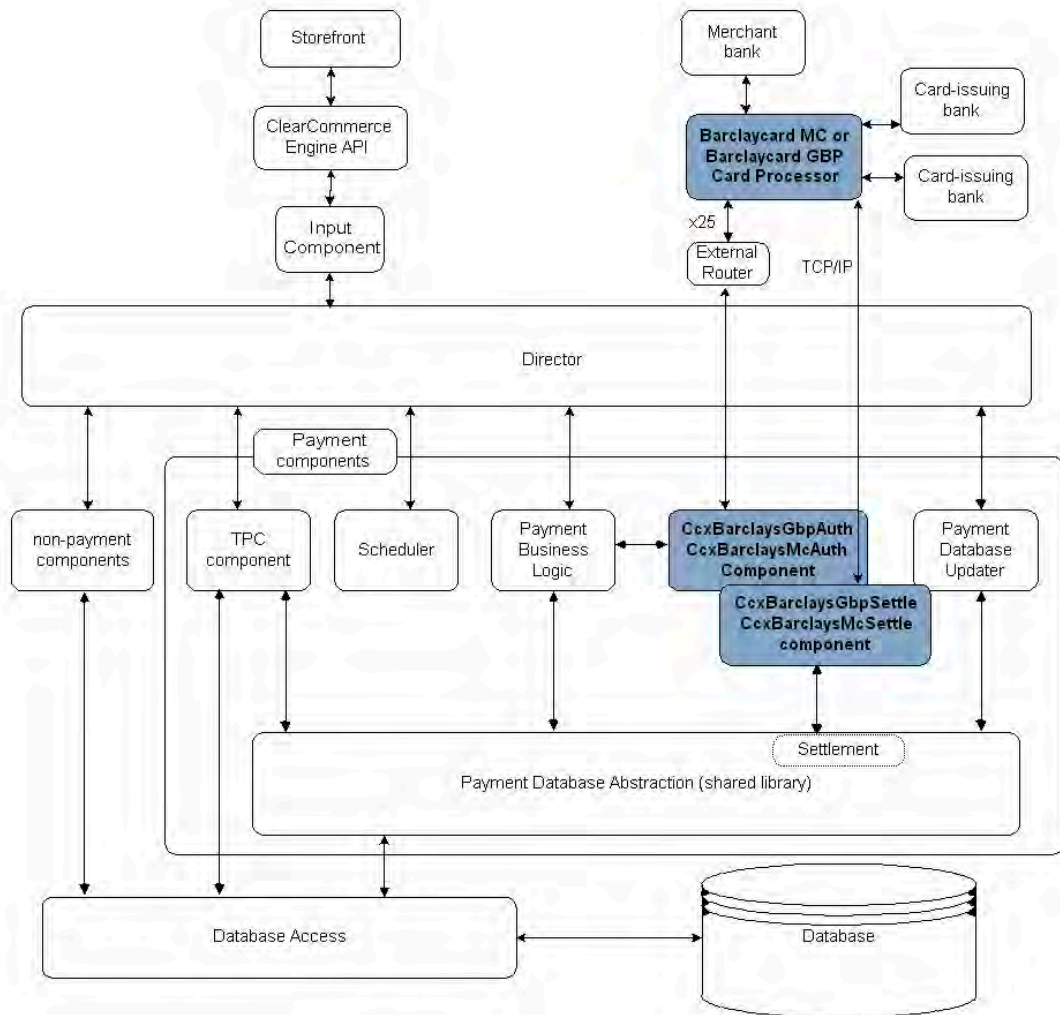


Figure 1-3 Payment components

For detailed information about the component architecture, refer to the *System Administrator Guide*.

Capabilities of Barclaycard

The ClearCommerce Engine works with Barclaycard to perform the following tasks:

- Validate transaction input
- Format and package requests according to Barclaycard's protocol and specifications
- Manage the X.25 authorization between the ClearCommerce Engine and the router and FTP settlement communication
- Receive the response from Barclaycard
- Match the response to the appropriate request
- Parse and save information from Barclaycard's response

To perform these tasks, Barclaycard provides the support and capabilities described in the following table. These capabilities are further described in the following sections.

Table 1-1 Barclaycard Capabilities (Page 1 of 3)

Feature	Support or Capability Provided
Payment Specification Compliance	Support as described in: <i>APACS Standard 29 Data Formats for Interchange Version 18, February 1, 2003</i> <i>APACS Standard 30 Specification for an Authorisation Terminal Version 18, February 1, 2003</i> <i>APACS Common Attachment to Standards 29, 30, 40, and 50 Version 18, February 1, 2003</i>
Communication Methods	Authorization: TCP/IP through a persistent connection to an external device. The external device is used for bi-directional translation of TCP/IP to X.25. Connection between external device to Barclaycard is over an X.25 leased line. Settlement: FTP session using TCP/IP.
Multithreading Capability	Yes
Interleaving Capability	No

Table 1-1 Barclaycard Capabilities (Page 2 of 3)

Feature	Support or Capability Provided
Cards Supported	Electron JCB Maestro MasterCard Solo UK Maestro Visa Visa commercial cards are also supported.
Currencies Supported	Multiple Currency, one currency supported per Store.
Payer Authentication Support	Maestro, UK Maestro, Solo, and MasterCard: SecureCode support for 3-D Secure 1.02 and PC Authentication 1.0.1 Visa and Electron: Verified by Visa support for 3-D Secure 1.0.2
Periodic Billing Capability	Barclaycard supports recurring periodic transactions for Maestro, UK Maestro, Electron, JCB, MasterCard and Visa card types. Periodic billing is not supported for Solo card types.
Clustering Support	Yes
Data Capture Levels	Level I, Level II, and Level III data capture.
Visa Global Invoice Specification (VGIS)	Yes. GBP (pounds sterling) processor interface only. The Miscellaneous Merchant sector is supported. Supported transaction types include e-commerce and mail order / telephone order.
AVS Capability	Yes
CVM Support	CVV2 support for Visa and Electron CVC support for MasterCard, Maestro, UK Maestro, and Solo
Settlement Type	Bulk Settlement

Table 1-1 Barclaycard Capabilities (Page 3 of 3)

Feature	Support or Capability Provided
Transaction Types Supported	<p>Online (requires a transaction record to be sent to Barclaycard):</p> <ul style="list-style-type: none"> Auth PreAuth PostAuth RePreAuth ReAuth Settle (Bulk at Account Administrator level) <p>Offline (updates the database only; does not require that a transaction record be sent to Barclaycard until settlement is initiated):</p> <ul style="list-style-type: none"> Credit Void ForceInsertPreAuth ForceInsertAuth ForceUpdatePreAuth ForceUpdateAuth Settle (Store level - marks transactions Bulk Pending)

Communication Methods

The ClearCommerce Engine manages TCP/IP socket connections with Barclaycard through an external device (usually a router), which performs bi-directional translation between TCP/IP and X.25. The communication method for settlement is FTP protocol over a TCP/IP socket connection between the ClearCommerce Engine host machine and Barclaycard.

Multithreading Capabilities

The ClearCommerce Engine and the Barclaycard card processor support multithreading. That is, the Engine can send to Barclaycard multiple, concurrent authorization transactions and can receive responses in any order. Without multithreading, each transmitted transaction must wait for a response before sending the next transaction.

Cards Supported

Barclaycard MC supports the following cards in British Pound and other currencies:

- MasterCard
- Maestro
- Visa
- Electron

Barclaycard GBP supports the following cards in British Pound only:

- Visa
- MasterCard
- Electron
- JCB
- Maestro
- UK Maestro
- Solo

Currencies Supported

The ClearCommerce Engine and Barclaycard support multiple currency processing, one currency per store only. Barclaycard GBP processes transactions in Pounds Sterling (826) only. Barclaycard MC processes multiple currencies including Pounds Sterling. For details on supported currencies, refer to “Currency Configuration” on page 30.

Payer Authentication Support

Payer authentication is the process of verifying that the person attempting to make an online purchase with a credit card is the cardholder. To complete a purchase using a payer authentication system, the customer typically enters a password for the card. (This password has been previously registered with the issuer of the credit card.) If the password matches, the card is authenticated. The authentication code is sent to the ClearCommerce Engine and eventually passed to the processor.

Merchants benefit from payer authentication by receiving protection from fraudulent chargeback claims. Customers benefit because their credit card information is protected when they make online purchases.

The ClearCommerce Engine supports the following types of payer authentication:

- Visa and Electron: Verified by Visa support for 3-D Secure 1.0.2 protocol
- Maestro, UK Maestro, Solo, and MasterCard: SecureCode support for PC Authentication 1.0.1 and 3-D Secure 1.0.2

Note: For Solo card, payer authentication is required

The *ClearCommerce Payer Authentication* publication provides additional information about implementing payer authentication with the ClearCommerce Engine. In addition, contact Visa or MasterCard for additional publications necessary for implementing payer authentication.

Periodic Billing Capability (recurring only)

The ClearCommerce Engine supports recurring and installment periodic transactions. Recurring is a transaction in which a cardholder gives permission to the merchant to charge the cardholder's account periodically. Installment periodic transactions are treated as recurring transactions.

The ClearCommerce Engine immediately rejects any new order that uses an expired credit card. However, in periodic billing orders, it is possible for a valid credit card to expire before periodic billing is completed. Expired credit cards continue to be processed only when orders are submitted through the ClearCommerce Engine periodic billing scheduler.

Payer authentication can be performed on the first transaction only in a periodic billing order. All subsequent transactions must be sent as a standard e-commerce transaction.

Note: Periodic billing is not supported for Solo card.

Refer the to the *Store Administrator Guide* for information on how to use periodic billing. To use an OrderFormDoc, refer to the *ClearCommerce Engine API Reference and Guide*.

Data Capture Levels

The ClearCommerce Engine and Barclaycard support Level I, Level II, and Level III data capture which includes transaction and order details that may be used for VGIS transactions. Also, for non-VGIS transactions, collecting this information may be useful because many of these fields can be used by other components on the ClearCommerce Engine, such as Digital Receipts or Reports.

- Level I: Cards are authorized and associated with minimal transaction data through settlement. This data includes card account number, expiration date, transaction amount, and basic merchant data.
- Level II: In addition to Level I data, Level II includes the Transaction Detail data, which is used at settlement time. The following information is collected for Level II:
 - Purchase Order Number
 - State Tax
 - Tax Exempt Indicator
 - Ship From Zip Code
 - Ship to Zip Code
 - Destination Country
 - Discount Amount
 - Ship Amount
 - Duty Tax
 - Store
- Level III: Combines additional Order Item detail information and is comprised of two levels of enhanced data. The following levels of commercial card transaction data is used at settlement time:
 - Summary data (occurs once per transaction)
 - Order Item detail (occurs n times per transaction)

The following required Level III data is not specific to Barclaycard, but is determined by industry regulations. Level III per-transaction summary data includes:

- Tax Exempt Indicator
- Product Code
- Commodity Code
- Tax Rate
- Discount Amount
- VAT Amount
- Shipping Rate
- Shipping Amount
- Item Description
- Quantity
- Unit of Measure/Code
- Weight
- Unit Cost
- Line Item Total
- State Tax
- Tax Type
- Tax Included Indicator

The higher the capture level, the larger the database requirements. Level I requires less space than Level II, and Level II requires less space than Level III. Performance might decline as the capture level increases due to larger data throughput.

Visa Global Invoice Specification (VGIS)

The ClearCommerce Engine and Barclaycard support Visa commercial card transactions using the Visa Global XML Invoice Specification (VGIS). VGIS is aimed at commercial card users who seek to exchange business-to-business invoice and payment data. Currently, only the miscellaneous merchant sector is supported. Supported transaction types include e-commerce and mail order/telephone order.

VGIS is supported for the GBP (pounds sterling) payment interface only. Other types of commercial cards, including some Visa commercial cards can be used to make a purchase, but those transactions are treated as standard credit card transactions. The Barclaycard MC processor does not support any commercial cards.

For more information, see Chapter 6, “Implementing VGIS” on page 65.

Address Verification Service (AVS)

The ClearCommerce Engine and Barclaycard support the Address Verification Service (AVS) for Visa and MasterCard. AVS verifies that the billing information supplied by the person placing the order matches the billing information on record at the cardholder’s card-issuing bank.

The merchant’s storefront should prompt cardholders to type the billing address exactly as it appears on their card statements. The payment processor forwards the billing street address and postal code data to the card-issuing authority, where this information is compared against database information for that customer. If all other factors (for example, card number and expiration date) cause the transaction to be approved, an AVS response is returned. If other factors cause the transaction to be declined, no AVS response is returned.

An authorization does not fail because of an AVS address or postal code mismatch. That is, an approved transaction that receives an AVS “No Match” on street address, postal code, or both, is still approved. If a transaction fails AVS, the merchant can still accept the order.

Card Verification Method (CVM)

The ClearCommerce Engine and Barclaycard support several types of Card Verification Methods (CVMs). All CVMs help to ensure that the card being used in a purchase is in the possession of the person placing the order. The CVM used by the ClearCommerce Engine and Barclaycard depends on the type of card used, as shown in the following table.

Table 1-2 CVM Types

Card Type	Card Verification Method
Visa and Electron	Card Verification Value 2 (CVV2), which uses a 3 -digit code usually printed in the signature area of the card.
Maestro, UK Maestro, and MasterCard	Card Validation Code (CVC), which uses a 3-digit code usually printed in the signature area of the card.

Like AVS, the CVM response provides information that can help the merchant decide whether or not to ship goods.

Merchants prompt customers to provide the CVM code when customers pay for purchases, along with other card information such as account number and expiration date. The CVM code becomes part of the authorization request to the card processor. The CVM code in the request is compared against the number expected to be associated with the card number, and a CVM response is returned to the merchant along with the authorization code and AVS code. The CVM code is not stored in the database.

Because implementation of CVM is not yet supported by all cards, not all transactions include this information.

Settlement Type

This processor supports bulk settlement. In bulk settlement, when settlement is initiated for a store, all transactions in the batch are given Bulk Ready status until bulk settlement is initiated by the account administrator. Refer to the *Account Administrator (CSP) Guide* and the Account Administrator (CSP) Tool online help for information on initiating settlement.

Refer to Chapter 2, “Payment Configuration” on page 23 for details on configuration of the CSP entity for bulk settlement.

Transaction Type Support

Descriptions of the transaction types that are used by the ClearCommerce Engine follow. Each description includes:

- Alternate terms by which you might know the transaction type, because industry terminology is not consistent.
- A summary of what the transaction is used for.
- Information about how the transaction is performed and the activities associated with it.

Primary

The primary transaction types are payment-related and each one creates a new transaction when initiated (as contrasted with secondary transactions, which are also payment-related, but which act on a previously existing transaction or orders when initiated).

Table 1-3 Primary Transactions (Page 1 of 2)

Transaction Type	What It's For	What You Need to Know
<p>PreAuth</p> <p><i>Also called:</i> Preauthorization Authorization Authorize Only</p>	<p>Obtains authorization from the authorizer for the amount of the purchase. An approved PreAuth places a hold on the account holder's "open-to-buy" amount.</p>	<p>If a PreAuth transaction is accepted by the authorizer, its status is (A) Approved. If not accepted, its status is (D) Declined or (R) Referred.</p> <p>Before a merchant can begin the process to collect the payment, the purchase must be "completed" by a corresponding PostAuth transaction.</p> <p>A PreAuth can be initiated from a storefront, from the Store Administrator Tool, or through the ClearCommerce Engine API.</p>
<p>Auth</p> <p><i>Also called:</i> Authorization/Capture Preauthorization /Postauthorization Sale</p>	<p>Preauthorizes and postauthorizes in one step. In the U.S., an Auth is typically used for purchases that do not require physical shipment of goods. An approved Auth places a hold on the account holder's "open-to-buy" balance and the purchase is immediately ready to be settled.</p>	<p>If an Auth transaction is accepted by the authorizer, its status is (C) Captured. If not accepted, its status is (D) Declined or (R) Referred.</p> <p>If approved, the purchase is ready to be settled without any further action.</p> <p>An Auth can be initiated from a storefront, from the Store Administrator Tool, or through the ClearCommerce Engine API.</p>

Table 1-3 Primary Transactions (Continued) (Page 2 of 2)

Transaction Type	What It's For	What You Need to Know
Credit (independent) <i>Also called:</i> Refund Rebate	Transfers money from the merchant's account to an account holder's account. A primary credit does not relate the credit to a previously existing order.	In most cases, a Credit transaction does not require approval by the authorizer, and its status is automatically (C) Captured. A Credit is automatically settled in the next batch. A Credit can be initiated from the Store Administrator Tool or through the ClearCommerce Engine API.
ForcelInsertPreAuth	Inserts an approved PreAuth transaction into the database. Approval was obtained outside the Engine process (for example by voice authorization). In the U.S., used when the purchase consists of products that must be physically shipped.	A ForcelInsertPreAuth transaction is not sent to the processor. Its status is (A) Approved. Before a merchant can begin the process to collect the payment, the purchase must be "completed" by a corresponding PostAuth transaction. A ForcelInsertPreAuth can be initiated from the Store Administrator Tool or through the ClearCommerce Engine API.
ForcelInsertAuth	Inserts an approved Auth transaction into the database. Approval was obtained outside the Engine process (for example by voice authorization). Used when the purchase is immediately ready to settle.	A ForcelInsertAuth transaction is not sent to the processor. Its status is (C) Captured. The purchase is ready to be settled without any further action. A ForcelInsertAuth can be initiated from the Store Administrator Tool or through the ClearCommerce Engine API.

Secondary

The secondary transaction types are payment-related and most act on a previously existing transaction or order when initiated. The exception is a Credit (secondary), which references an existing transaction or order, but actually results in creation of a new transaction and order.

Table 1-4 Secondary Transactions (Page 1 of 4)

Transaction Type	What It's For	What You Need to Know
PostAuth <i>Also called:</i> Postauthorization Capture Ticket Only	Confirms that the purchase has been completed (ordered goods have been shipped) and is ready to be settled.	In most cases, a PostAuth does not require approval by the authorizer. A PostAuth changes the status of an approved PreAuth from (A) Approved to (C) Captured. Note: The amount that is postauthorized must be less than or equal to the preauthorized amount. If a PostAuth is used to initiate partial shipment, depending on the store's configuration, a new transaction might be created that is associated with the same order. A PostAuth can be initiated from the Store Administrator Tool or through the ClearCommerce Engine API.

Table 1-4 Secondary Transactions (Page 2 of 4)

Transaction Type	What It's For	What You Need to Know
Credit (on an existing order) <i>Also called:</i> Refund Rebate Return	Transfers money from the merchant's account to an account holder's account. Used to refund an account holder's money for an order that was settled.	In most cases, a secondary Credit does not require approval by the authorizer. A secondary Credit creates a new transaction that is associated with the same order. The secondary Credit's transaction status is automatically (C) Captured. A secondary Credit is automatically settled in the next batch. Note: The total credit amount must not exceed the sum of the captured and settled transactions associated with the order minus the amounts already credited. A secondary Credit can be initiated from the Store Administrator Tool or through the ClearCommerce Engine API.
Void <i>Also called:</i> Cancel Reversal Full Reversal	Cancels a transaction that has not yet settled.	In most cases, a Void transaction does not require approval by the authorizer. A Void changes the status of a transaction from (A) Approved or (C) Captured to (V) Voided. A Void can be initiated from the Store Administrator Tool or through the ClearCommerce Engine API.

Table 1-4 Secondary Transactions (Page 3 of 4)

Transaction Type	What It's For	What You Need to Know
RePreAuth	Resubmits a PreAuth transaction to the authorizer. In the U.S., used when the purchase consists of products that must be physically shipped.	<p>A RePreAuth is initiated on a PreAuth transaction that is currently in the database with a status of (NW) New, (R) Referred, (D) Declined, or (A) Approved. If a RePreAuth transaction is accepted by the authorizer, its status is (A) Approved. If not accepted, its status is (D) Declined or (R) Referred.</p> <p>Before a merchant can begin the process to collect the payment, the purchase must be “completed” by a corresponding PostAuth transaction.</p> <p>A RePreAuth can be initiated from the Store Administrator Tool or through the ClearCommerce Engine API.</p>
ReAuth	Resubmits an Auth transaction to the authorizer. Used when the purchase is immediately ready to settle.	<p>A ReAuth is initiated on an Auth transaction that is currently in the database with a status of (NW) New, (R) Referred, (D) Declined, or (C) Captured. If a ReAuth is accepted by the authorizer, its status is (C) Captured. If not accepted, its status is (D) Declined or (R) Referred.</p> <p>If approved, the purchase is ready to be settled without any further action.</p> <p>A ReAuth can be initiated from the Store Administrator Tool or through the ClearCommerce Engine API.</p>

Table 1-4 Secondary Transactions (Page 4 of 4)

Transaction Type	What It's For	What You Need to Know
ForceUpdatePreAuth	<p>Forcibly approves a PreAuth transaction in the database and updates the authorization code. Approval was obtained outside the Engine process (for example by voice authorization). In the U.S., used when the purchase consists of products that must be physically shipped.</p>	<p>A ForceUpdatePreAuth transaction is not sent to the authorizer. Its status is changed from (NW) New, (D) Declined, or (R) Referred to (A) Approved.</p> <p>Before a merchant can begin the process to collect the payment, the purchase must be “completed” by a corresponding PostAuth transaction.</p> <p>A ForceUpdatePreAuth can be initiated from the Store Administrator Tool or through the ClearCommerce Engine API.</p>
ForceUpdateAuth	<p>Forcibly approves an Auth or PostAuth transaction in the database and updates the authorization code. Approval was obtained outside the Engine process (for example by voice authorization). Used when the purchase is immediately ready to settle.</p>	<p>A ForceUpdateAuth transaction is not sent to the authorizer. Its status is changed from (NW) New, (D) Declined, or (R) Referred to (C) Captured.</p> <p>The purchase is ready to be settled without any further action.</p> <p>A ForceUpdateAuth can be initiated from the Store Administrator Tool or through the ClearCommerce Engine API.</p>

Settlement

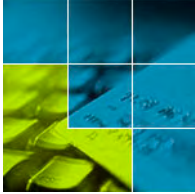
Settlement type transactions either settle a batch or correct a problem encountered while the batch was in the process of being settled.

Table 1-5 Settlement Transactions (Page 1 of 2)

Transaction Type	What It's For	What You Need to Know
<p>Settle</p> <p><i>Also called:</i> Settlement Batch Detail Draft Capture</p>	<p>Starts the process of actually transferring funds to or from the merchant's account.</p>	<p>When a Settle transaction is initiated, all transactions in (C) Captured and SS (Soft Settle Error) state are collected and packaged for settlement.</p> <p>In bulk settlement, after a Settle transaction is initiated for the store, all transactions in (C) Captured and (SS) Soft Settle Error state are marked (B) Bulk Ready. When the CSP or system administrator initiates bulk settlement to the processor, the transactions for the store are sent to the processor to settle. The status of those transactions moves to (P) Pending. If settlement is successful, each transaction's status moves to (S) Settled.</p> <p>Unsuccessful settlement moves transactions to either (SS) Soft Settle Error or (SH) Hard Settle Error state. Pending transactions that do not complete settlement (usually because the Engine crashes) stay in (P) Pending state, but move to (L) Locked state when the Engine restarts.</p> <p>Bulk settlement can be initiated automatically or manually using the Account Administrator (CSP) Tool, or using the ClearCommerce Engine API.</p>

Table 1-5 Settlement Transactions (Page 2 of 2)

Transaction Type	What It's For	What You Need to Know
UnlockSettlement	Unlocks a previously locked settlement (does <i>not</i> unlock transactions).	This transaction type must be run under the direction of ClearCommerce Technical Support.



Chapter 2 Payment Configuration

The Payment components, Barclaycard GBP and Barclaycard MC, are installed as part of the ClearCommerce Engine. Following installation, specific information defining the connection between the instance of the Engine and Barclaycard must be configured.

In bulk settlement, the settlement batches for multiple stores are sent to the processor at one time. This model requires configuration by both a store administrator and an account administrator to supply identifiers needed to define the settling entity's relationship to the processor. Also, store-level settlement and bulk settlement must be configured either to run automatically at a specified time each day or to be run manually.

In addition, for each store that sends transactions to Barclaycard, specific identifiers and routing information must be configured for the store.

While the ClearCommerce Engine supports an 8-bit character set, Barclaycard supports only a subset of the 7-bit character set. Therefore, as required by Barclaycard, 8-bit characters in some fields are replaced with a ? (question mark) by the ClearCommerce Engine as part of the process of transmitting authorization and settlement data to Barclaycard.

Component Configuration

Payment components are configured using command-line key/value pairs. These configuration fields are set to initial values during installation. Some initial values *must* be replaced following installation, while other values can be left at the defaults unless other values are preferred. The following components must be configured:

- CcxBarclaysGbpAuth
- CcxBarclaysGbpSettle
- CcxBarclaysMcAuth
- CcxBarclaysMcSettle

Key/value pairs are changed with the System Administrator Tool. Refer to the *System Administrator Guide* or System Administrator Tool online help for information about setting command-line key/value pairs.

The following tables show the parameter names and the descriptions of the expected values for the authorization components.

Table 2-1 Authorization Key/Value Pairs (Page 1 of 2)

Key Name	Description/Values
MaxResponseWaitTime	Maximum number of seconds to wait for processor response before considering processor timed out. Minimum 1 second, maximum 300 seconds. The default value is 30.
NumConnections	Number of separate connections to the remote host to establish or manage. Minimum 1, maximum 250. The default value is 1. If no value is provided, then 1 is the default. If a value less than or equal to 0 is provided, 1 is used. If the value is greater than 250, then 250 is used. If a number in the range $1 \leq x \leq 250$ is provided, then that number is used.
PrimaryHost	Host to connect to that routes transactions to Barclaycard. Must be a valid fully qualified host name or a valid <i>IP address</i> . The default value is localhost. This value must be replaced following installation.

Table 2-1 Authorization Key/Value Pairs (Continued) (Page 2 of 2)

Key Name	Description/Values
PrimaryHostPort	<p>A valid port to connect to the host that routes transactions to Barclaycard. The default value is 2113.</p> <p>This value must be replaced following installation.</p>
SecondaryHost	<p>Optional host when primary host is not available. Must be a valid fully qualified host name or a valid IP address. The default value is localhost.</p> <p>Note: If there is no SecondaryHost name, then enter the PrimaryHost name in the SecondaryHost name field. The PrimaryHost is tried one time before trying the SecondaryHost, so using the SecondaryHost this way allows the Engine another attempt to connect to the PrimaryHost.</p>
SecondaryHostPort	<p>Port to connect to for secondary host. Must be a valid port number. The default value is 2113.</p> <p>Note: If there is no SecondaryHostPort name, then enter the PrimaryHostPort name in the SecondaryHostPort name field. The PrimaryHostPort is tried one time before trying the SecondaryHostPort, so using the SecondaryHostPort this way allows the Engine another attempt to connect to the PrimaryHostPort.</p>

The following tables show the parameter names and the descriptions of the expected values for the settle components.

Table 2-2 Settlement Key/Value Pairs (Page 1 of 2)

Key Name	Description/Values
FtpTransferMode	<p>Mode for transferring file. Must be one of the following values:</p> <p>Active If Active FTP transfer is used</p> <p>Passive If Passive FTP transfer is used</p>
NumConnections	<p>Number of separate connections to the remote host to establish or manage. Minimum 1, maximum 10. The default value is 1.</p> <p>If no value is provided, then 1 is the default. If a value less than or equal to 0 is provided, 1 is used. If the value is greater than 10, then 10 is used. If a number in the range $1 \leq x \leq 10$ is provided, then that number will be used.</p>
NumSettleThreads	<p>Number of concurrent settlement transactions. Minimum 1, maximum 10. The default value is 1.</p>
PrimaryHost	<p>Barclaycard host to connect to. Must be a valid fully qualified host name or a valid <i>IP address</i>. The default value is localhost.</p> <p>This value must be replaced following installation.</p>
PrimaryHostPort	<p>A valid port to connect to the primary host. The default value is 2113.</p> <p>This value must be replaced following installation.</p>
SecondaryHost	<p>Optional host when primary host is not available. Must be a valid fully qualified host name or a valid IP address. The default value is localhost.</p> <p>Note: If there is no SecondaryHost name, then enter the PrimaryHost name in the SecondaryHost name field. The PrimaryHost is tried one time before trying the SecondaryHost, so using the SecondaryHost this way allows the Engine another attempt to connect to the PrimaryHost.</p>

Table 2-2 Settlement Key/Value Pairs (Page 2 of 2)

Key Name	Description/Values
SecondaryHostPort	<p>Optional port to connect to for secondary host. Must be a valid port number. The default value is 2113.</p> <p>Note: If there is no SecondaryHostPort name, then enter the PrimaryHostPort name in the SecondaryHostPort name field. The PrimaryHostPort is tried one time before trying the SecondaryHostPort, so using the SecondaryHostPort this way allows the Engine another attempt to connect to the PrimaryHostPort.</p>

These values also can be reset using a ConfigDoc. Refer to the *ClearCommerce Engine API Reference and Guide* for information on using a ConfigDoc to configure payment processing.

Processor Configuration

Processor information is configured at two different levels:

- Bulk settlement configuration is done, and new stores are created and some payment-related fields are configured by the account administrator.
- New stores are configured for payment by the store administrator.

Bulk Settlement Configuration

The account administrator sets bulk settlement-related information that includes supplying processor configuration values and scheduling bulk settlement.

Bulk Settlement Processor Configuration

The account administrator can configure payment processor information for the CSP entity using the Account Administrator (CSP) Tool. See the *Account Administrator (CSP) Guide* and the Account Administrator (CSP) Tool online help for information about configuring these fields.

The following table shows the fields required to configure bulk settlement with Barclaycard for the CSP entity.

Table 2-3 Configuration Values - Account Administrator

Item	Description
PosId	Required. 10-character POS Id assigned by Barclaycard. Must be in the format POSxxxxxxx, where x is a digit.
VolSerialPrefix	Required. 3-letter field that specifies Volume Serial Prefix. Assigned by the Account Administrator.
FtpSuffix	Required. 3-digit code used as the suffix of the FTP destination file name. Assigned by Barclaycard for each POS Id.
FtpSuffixTest	Required. 3-digit code used as the suffix of the FTP destination file name. Assigned by Barclaycard for each test POS Id.
FtpUserName	Required. Up to 32-character user name for FTP settlement assigned by Barclaycard.
FtpPassword	Required. Up to 32-character password for FTP settlement assigned by Barclaycard. Valid for both FTP user names.

Bulk Settlement Scheduler Configuration

The account administrator can configure Settlement Scheduler information for the CSP entity using the Account Administrator (CSP) Tool.

Settlement Scheduler configuration specifies the time automatic bulk Settlement is run. If the CSP entity is not enabled to perform automatic settlement, bulk settlement must be manually initiated.

See the *Account Administrator (CSP) Guide* for information about setting automatic bulk settlement and manually initiating bulk settlement.

For details on the Settlement process, refer to Chapter 5, “Settlement with Barclaycard” on page 59.

Store Creation

The account administrator creates new stores, including specifying some information related to payment. Store creation values that are relevant for payment are listed in the table below. See the *Account Administrator (CSP) Guide* for more information on creating and maintaining stores.

Table 2-4 Store Creation Values (Page 1 of 2)

Field	Description
Currency	Code of the currency that the store uses. 840 (U.S. dollar) is the default. Must be changed to the supported currency for the store. Refer to “Currency Configuration” on page 30.
Partial Ship Follow-up	PostAuths for partial amounts can initiate an automatic follow-up PreAuth for the remaining amount. <ul style="list-style-type: none"> - No follow-up transaction - Follow-up transaction, immediate PreAuth - Follow-up transaction, no PreAuth See the <i>Store Administrator Guide</i> for details on this setting.
Commercial Card Option	Indicates if Level III information is sent to the processor for commercial card transactions. Off if merchant does not require that Level III data be present for commercial cards. On if merchant requires that Level III data be present for commercial cards.
Merchant Category Code	MCC or SIC code that identifies characteristics of a merchant’s business ownership; typically assigned by the merchant bank. Stored in the database as an encrypted value. Required for VGIS transactions.
Tax Id	Identifies the taxing authority. The value is either Federal tax ID (U.S.) or VAT ID (Non-U.S.)
MerchTaxId Country	The country that issued the store’s Tax ID.

Table 2-4 Store Creation Values (Page 2 of 2)

Field	Description
Alternate Tax Id	Tax ID for an alternate taxing authority. The specified ID can have up to 20 characters. The encrypted string can have up to 42 characters. Not valid for Barclaycard.
ICA Number	Identifier for the Store that is assigned by the merchant bank. Maximum of 20 characters. The encrypted string can have up to 42 characters. Not valid for Barclaycard.
Locale	Locale (language_country) for the store (en_US for U.S. English)
Validate Card Expiration Dates	Card expiration date is validated on all transactions. Off if the merchant does not require that card expiration dates are validated. On if the merchant requires that card expiration dates are validated.
Industry Standard Code	Required. Denotes the industry to which the merchant belongs; 4 characters maximum. Not valid for Barclaycard.

Currency Configuration

Barclaycard supports multiple currencies. Each Store can use exactly one currency and must be assigned at least one POS Terminal Id. When an account administrator creates a store using the Account Administrator (CSP) Tool, the currency for the store is configured. The currency indicator must match the currency configured for the same store on the Barclaycard host. Therefore, to support multiple currencies, a separate store and POS Terminal Id for each currency must be created.

For example, if the merchant wants to support two currencies, the account administrator must create two Stores for the merchant. Each Store must have at least one POS Terminal Id and one valid currency code configured.

Barclaycard GBP processes transactions in Pounds Sterling (826) only.

Barclaycard MC processes transactions in multiple currencies. Appendix C, “Currency Codes” on page 95 lists the currencies that the ClearCommerce Engine supports.

Important: Contact a representative of the processor to determine which currencies the Barclaycard MC processor supports.

Store-Level Payment Configuration

The store administrator configures payment routing and payment processor identifiers, and also schedules settlement for the store.

Payment Routing

Payment routing information must be configured so that the ClearCommerce Engine sends transactions from the store to the correct card processors.

- If the Store authorizes with Barclaycard GBP, then the store must settle with Barclaycard GBP.
- If the Store authorizes with Barclaycard MC, then the store can settle with either Barclaycard MC or Barclaycard GBP.

For the tasks associated with payment routing, refer to the *Store Administrator Guide*.

Processor Configuration - Store

Payment processor configuration supplies identifiers for the store, so that when Barclaycard receives transactions from the store, transactions are routed to the correct authorizers or merchant banks. Processor configuration values are detailed in the table below.

Table 2-5 Configuration Values - Store (Page 1 of 2)

Item	Description	Required by
MerchantId	Required. 2- to 11-character merchant identifier assigned by Barclaycard.	Barclaycard MC Barclaycard GBP

Table 2-5 Configuration Values - Store (Page 2 of 2)

Item	Description	Required by
SortCode	Required. 6-digit Sorting Code for settle transactions. Assigned by Barclaycard.	Barclaycard MC Barclaycard GBP
AccountNumber	Required. 8-digit account number required for settle transactions. Assigned by Barclaycard.	Barclaycard MC Barclaycard GBP
TerminalIdPool	8- to 256-character identifier that represents one or more 8-digit identifiers assigned to the merchant by Barclaycard. Terminal identification can be specified as a comma separated list, as a range using a dash, or both. The following example defines a list that includes terminal IDs 00000000 and 00000002 through 00000006. 00000000, 00000002 - 00000006	Barclaycard MC Barclaycard GBP
ExchangeRate	1- to 10-character value that indicates the exchange rate from local currency to Euro. For stores that support Euro only.	Barclaycard MC optional
ExchangeToCurrCode	3-character Currency Code that indicates the local currency to display on the digital receipt. For stores that support Euro only.	Barclaycard MC optional

If you are configuring the Barclaycard GBP processor, the following fields may also be available:

- VisaStoreCompanyName
- VisaStoreCity
- VisaStorePostalCode
- VisaStoreCountry
- VisaCommercialCardDataAllowed

These fields are used in conjunction with the Visa Global XML Invoice Specification (VGIS). If you wish to use VGIS for business transactions, you must first make arrangements with Barclaycard Merchant Systems. For more information on these fields, see “Enabling VGIS” on page 70.

Settlement Scheduler Configuration

Store settlement can be configured either to run automatically at a specified time each day or it can be run manually.

Settlement Scheduler configuration specifies the time automatic settlement is run. The store administrator configures Settlement Scheduler information for the store using the Store Administrator Tool. If a store is not enabled to perform automatic settlement, settlement must be manually initiated.

Refer to the *Store Administrator Guide* for the tasks associated with manually initiating settlement

Payment Configuration



Chapter 3

Payment Testing

The ClearCommerce Engine provides two different mechanisms to run non-production transactions:

- Test components
- Payment Simulator component

Test Components

Test components are identical to production payment processor components, but are configured slightly differently. The test component is configured to “point to” the test system on the processor end, using the ClearCommerce Engine’s standard component configuration methods. Test mode is used to route the transactions to the ClearCommerce Engine’s test component, rather than to the production component.

If Barclaycard has offered the store access to a test system for staging and certification, then the authorization and settlement components can be used to test the system. To use the test components the following must be completed:

- Configure the CcxBarclaysGbpAuthTest, CcxBarclaysMcAuthTest, CcxBarclaysGbpSettleTest, and CcxBarclaysMcSettleTest components. Information is similar to configuration information provided for production components; identifiers are provided by Barclaycard.
- When transactions are created to send to the test system, specify or select the ClearCommerce Engine’s Test mode for those transactions.

Transactions are sent to the Barclaycard test system and the results are recorded in the ClearCommerce Engine database.

Payment Simulator Component

The ClearCommerce Engine includes a component called CcxPaymentSimulator that processes payment transactions and returns a simulated response. To use the simulator the following must be completed:

- No component configuration is necessary. In the list of components installed, the CcxPaymentSimulator component is among those listed. Configuration information associated with this component can be viewed, but no additional configuration is necessary.
- For transactions that use the simulator, specify or select one of the ClearCommerce Engine's simulation modes for those transactions:

Table 3-1 Payment Simulator Modes

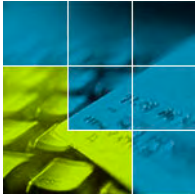
Mode	Description
(Y) Approved	Transaction is treated as Approved by the payment simulator.
(N) Declined	Transaction is treated as Declined by the payment simulator.
(R) Random	Transaction is treated as either Approved or Declined by the payment simulator.

The response includes the following information:

- Transaction status (Approved or Declined)
- An authorization code (a simulated 6-digit authorization/approval code) or error code

The results for these transactions are written to the database so that a PreAuth transaction sent through the payment simulator can be processed further using a PostAuth or Void transaction.

For Settlement transactions, the payment simulator either approves or rejects the entire batch, which is comprised of all simulated transactions for the store that are ready to be settled.



Chapter 4

Authorization with Barclaycard

The authorization process begins when the customer submits to the store purchase information, such as, card data, bill-to address, and ship-to address information. The process finishes when the Engine returns the results of the authorization request.

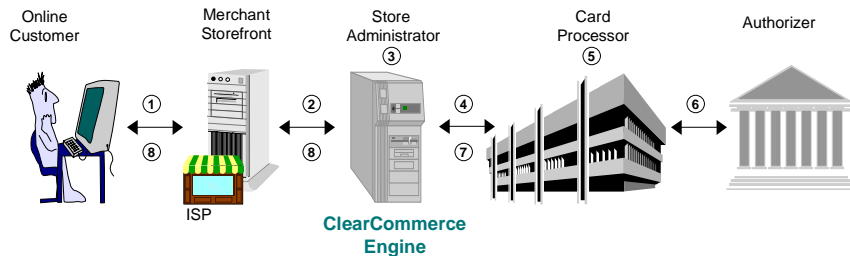


Figure 4-1 Authorization process flow

Authorization Process Flow

- 1 Customer clicks a “Buy it” button to submit encrypted purchase information to the store.
- 2 The store sends the transaction through the API client to the ClearCommerce Engine.
- 3 At the ClearCommerce Engine, the data is unencrypted, a series of checks is performed, and the transaction is written to the database.
- 4 If the data fails the checks, an error message is sent through the API back to the merchant. Nothing is sent to the Barclaycard card processor.
- 5 If the data passes the checks, the Engine packages the data according to Barclaycard’s protocol and specification, and then sends the transaction to the appropriate Barclaycard processor by TCP/IP through a persistent connection

to an external device. The external device is used for bi-directional translation of TCP/IP to X.25. Connection between external device to Barclaycard is over an X.25 leased line.

- 6 At Barclaycard, additional checks are performed on the transaction data. If the transaction fails any of the checks, it is returned to the ClearCommerce Engine with an error code.
If the transaction passes, the Barclaycard card processor routes it to the card-issuing authority, where the transaction is approved or declined.
- 7 If the card-issuing authority declines the transaction, it returns a *declined response code* to Barclaycard. If approved, the card-issuing authority issues an *approved authorization response code* to Barclaycard and reduces the customer's available open-to-buy balance. However, the card-issuing authority does not charge the account until the Settlement process occurs.
- 8 Barclaycard routes the *response code* back to the ClearCommerce Engine, where the data is parsed and stored.
- 9 The Engine then routes the approved or declined response code to the API client, which passes the information back to the store.

Authorization Input

Some authorization input data comes from the OrderFormDoc for the transaction, while data that corresponds to information configured for the component or the store is read from the database

Important: VGIS transactions require specific OrderFormDoc fields. If your storefront is authorized to perform VGIS transactions, and an enhanced data Visa Commercial Card transaction is submitted without VGIS data, Barclaycard Merchant Services will reject the transaction. See *ClearCommerce Engine API Reference and Guide* for details on the Authorization input required for VGIS transactions

While the ClearCommerce Engine supports the 8-bit character set, Barclaycard supports only the 7-bit character set. Therefore, as required by Barclaycard, 8-bit characters in some fields are replaced with a ? (question mark) by the ClearCommerce Engine as part of the process of transmitting authorization and settlement data to Barclaycard.

8-bit to 7-bit conversion is performed on the following fields only:

- Consumer AVS information (address fields)
- Item description
- Item commodity code
- Item product code
- Merchant address
- Merchant name
- Merchant reference number
- Charge description (American Express only)
- Customer code
- Purchase order number
- Ship from postal code
- Ship to postal code

No data conversion is performed on other fields. Data entered in these fields is sent exactly as entered. In particular, note that data entered in the following fields is not expected to contain 8-bit data and is not converted:

- CVV2 value (Cvv2Val)
- Customer VAT registration
- Destination country
- Auth code
- CVV2 indicator
- Unit of measure
- Tax type

The following table lists the fields that are part of an authorization request to Barclaycard for non-VGIS transactions.

Table 4-1 Authorization Input (Page 1 of 10)

Field	Expected Value
Minimum Required Transaction Fields	
OrderFormDoc. Mode	<p>The ClearCommerce Engine supports a mode that is used in a production environment and four modes for testing transactions</p> <p>P Production mode; real transactions are processed by card processor.</p> <p>Y Simulation mode; always generates an approval.</p> <p>N Simulation mode; always generates a decline.</p> <p>R Simulation mode; random responses.</p> <p>T Test mode; transactions are sent to card processor's test system.</p> <p>Refer to Chapter 3, "Payment Testing" on page 35 for information on modes other than production.</p>
OrderFormDoc.Transaction. Type	Type of transaction to perform. The type must be one of PreAuth, Auth, RePreAuth, ReAuth.
OrderFormDoc.Consumer. PaymentMech.CreditCard. Number	Number of the card the customer used to pay for the order. The maximum length is 40 characters. The number must be within the range allowed for the credit card type.
OrderFormDoc.Consumer. PaymentMech.CreditCard. Expires	<p>Date the card expires. This value must be in the format MM/YY or MM/DD/YY. Date checks performed on this field by the ClearCommerce Engine are buffered by 24-hours to handle timezone differences.</p> <p>Note: Periodic transactions (CardholderPresentCode = 8 or 10) that use expired credit cards are accepted by the ClearCommerce Engine and passed on to the processor. For expired cards, the card expiration date will show a value of 22/22.</p>
OrderFormDoc.Transaction. CurrentTotals. Totals. Total	For all transactions, the value must be expressed as a positive integer. The maximum value is 999999999999. For a currency that contains decimal places, the Engine interprets the value as having the appropriate number of decimal places. For example, a 9999999 value in U.S. Dollars, which has two decimal places, is interpreted as 99,999.99 dollars.

Table 4-1 Authorization Input (Page 2 of 10)

Field	Expected Value
OrderFormDoc.Consumer. PaymentMech.CreditCard. IssueNum	For card types UK Maestro or Solo, an incremental counter of either 1 or 2 characters defined by the issuing bank. The Card Issue Number must be submitted if it is printed or embossed on the card. Note: The Card Issue Number must be submitted exactly as shown on the card. For example: <ul style="list-style-type: none"> • If the card displays “01”, submit “01”, <i>not</i> “1”. • If the card displays “1”, submit “1”.
OrderFormDoc.Consumer. PaymentMech.CreditCard. StartDate	For card type UK Maestro or Solo, the day the card becomes active in the MMY format. The Start Date must be submitted if it is printed or embossed on the card.
Address Verification Service (AVS) Fields	
Note: Although AVS fields are optional, leaving them blank might adversely affect the discount rate.	
Consumer.BillTo.Location. Address. PostalCode	Postal code of the address to which the order is billed.
Consumer.BillTo.Location. Address. Street1	The Street1, Street2, and Street3 fields are concatenated into a single entry in the database. The numeric portion of the street address is used for AVS. If the CVM value and the postal code are not included, then this field can be up to 14 digits. Postal code, if present, is up to 5 digits. The concatenation will be truncated if CVM + PostalCode + Street1 + Street2 + Street3 exceeds 14 digits. See CVM fields for information on that value.
Consumer.BillTo.Location. Address. Street2	
Consumer.BillTo.Location. Address. Street3	
Card Verification Method (CVM) Fields	
Note: Although CVM fields are optional, leaving them blank might adversely affect the discount rate.	

Table 4-1 Authorization Input (Page 3 of 10)

Field	Expected Value
OrderFormDoc.Consumer.PaymentMech.CreditCard. Cvv2Val	A 3- or 4-digit code located in the signature area on the back of a credit card. Note: If the Cvv2Indicator is set to 2, 3 or 5, then the Cvv2Val must be an empty string. Characters, including spaces, are not valid and cause the ClearCommerce Engine to reject the transaction.
OrderFormDoc.Consumer.PaymentMech.CreditCard. Cvv2Indicator	Specifies one of the following values Visa and MasterCard only: 0 The store does not support, or is incapable of submitting, CVM values. 1 CVM value present, and submitted from the store. 2 CVM not present on card (per consumer). 3 CVM value present, but illegible. 4 The processor does not support, or is incapable of submitting, CVM values. 5 CVM value intentionally not provided. Note: If the Cvv2Indicator is set to 2, 3 or 5, then the Cvv2Val must be an empty string. Characters, including spaces, are not valid and cause the ClearCommerce Engine to reject the transaction.
Transaction Detail Fields	
Note: These fields describe transaction details that may used for VGIS settlement transactions. Many of these fields are also used by other components on the ClearCommerce Engine, such as Digital Receipts and Reports.	
(Ship to) PostalCode	Postal code of the location to which the purchase will be shipped.
OrderFormDoc.Transaction. AltTax	Total amount of alternate or secondary tax applied to the transaction. This tax is not duty, state, or VAT tax. The maximum value is 9999999. For VGIS transactions, must be zero, or must not be used.
OrderFormDoc.Transaction. BuyerCode	Cardholder reference number that is supplied to the merchant by the cardholder.

Table 4-1 Authorization Input (Page 4 of 10)

Field	Expected Value
OrderFormDoc.Consumer. ShipTo.Location.Address. Country	Number representing the country where the order is shipped. The country code must follow ISO format. Refer to Appendix A, "Country Codes" on page 81 for a list of country codes.
OrderFormDoc.OrderItemList. OrderItem. DiscAmt	Discount amount that is associated with a transaction. The maximum value is 9999999. For VGIS transactions, must be zero, or must not be used.
OrderFormDoc.OrderItemList. OrderItem. DutyTax	Import or export tax levied on different goods with different rates. The maximum value is 9999999. For VGIS transactions, must be zero, or must not be used.
OrderFormDoc.Transaction. PoNumber	Purchase order number. The maximum length is 25 characters.
OrderFormDoc.Consumer. ShipTo.Location.Address. PostalCode	Postal code of the location that the purchase is shipped from.
OrderFormDoc.OrderItemList. OrderItem. Ship	Amount of shipping calculated by the shipping component or indicated by the merchant. The maximum value is 9999999. For VGIS transactions, must be zero, or must not be used.
OrderFormDoc.OrderItemList. OrderItem. StateTax	State sales tax amount calculated by the tax component or sent by the merchant. The maximum value is 999999. For VGIS transactions, must be zero, or must not be used.
OrderFormDoc.OrderItemList. OrderItem. VaShipAmt	Amount of tax applied to freight or shipping charges. For VGIS transactions, must be zero, or must not be used.
OrderFormDoc.OrderItemList. OrderItem. VaShipRate	Value added tax that is associated with the shipping charge. The maximum value is 9999999.
OrderFormDoc.OrderItemList. OrderItem. VatPercent	Rate of VAT or other tax. The rate can be a number up to 5 digits, and the precision can be 5 digits.
OrderFormDoc.OrderItemList. OrderItem. VatTax	Total amount of value added tax or other tax. The maximum value is 9999999.

OrderItem Fields

Note: These fields describe a purchased item. OrderItem fields may be used for processing VGIS transactions. Also, for non-VGIS transactions, collecting this information may be useful because many of these fields can be used by other components on the ClearCommerce Engine, such as Digital Receipts or Reports.

Table 4-1 Authorization Input (Page 5 of 10)

Field	Expected Value
EngineDoc.OrderFormDoc. OrderItemList.OrderItem. CommCode	An international description code of the individual good or service being supplied. The merchant bank or processor should provide the merchant an updated listing of currently defined codes. For VGIS transactions, UNSPSC commodity codes are recommended. See www.unspsc.org for more information. Commodity codes are not validated for VGIS compliance.
OrderFormDoc.OrderItemList. OrderItem. Desc	Text description of the individual item purchased.
OrderFormDoc.OrderItemList. OrderItem. DiscAmt	The amount of the line item discount. This string can contain up to 64 characters.
OrderFormDoc.OrderItemList. OrderItem. DutyTax	Amount of the duty tax applied to the item. The amount specified can be up to 15 digits. For VGIS transactions, must be zero, or must not be used.
OrderFormDoc.OrderItemList. OrderItem. GrossNetIndicator	Indicates if an item amount includes tax. Y Item amount includes tax N Item amount does not include tax
OrderFormDoc.OrderItemList. OrderItem. Id	Unique ID for the individual item of up to 40 characters.
OrderFormDoc.OrderItemList. OrderItem. ItemNumber	Assigns a number for each unique item in an order.
OrderFormDoc.OrderItemList. OrderItem. Price	Unit cost of the item purchased.
OrderFormDoc.OrderItemList. OrderItem. ProductCode	Merchant-defined code associated with the purchased item. In the U.S., the code might be a UPC code, SKU code or product number.
OrderFormDoc.OrderItemList. OrderItem. QtyNumeric	Specifies how many of an item was purchased. This value can contain up to 9 digits. Either Qty or QtyNumeric must be specified. If the Qty and QtyNumeric fields are specified for the same order item, the value in the QtyNumeric field takes precedence.
OrderFormDoc.OrderItemList. OrderItem. StateTax	Can be specified from the storefront application or computed by the Tax Calculator. The amount specified can be up to 18 digits. For VGIS transactions, must be zero, or must not be used.

Table 4-1 Authorization Input (Page 6 of 10)

Field	Expected Value
OrderFormDoc.OrderItemList.OrderItem. TaxExempt	Indicator of whether an individual item is taxable. If present, must be one of the following values: 0 The individual item is taxable. 1 The individual item is tax-exempt.
OrderFormDoc.OrderItemList.OrderItem. TaxType	Type of tax received from the store. The maximum length is 4 characters.
OrderFormDoc.OrderItemList.OrderItem. Total	Price plus taxes and other fees. The amount specified can be up to 18 digits.
OrderFormDoc.OrderItemList.OrderItem. UnitMeasure	Number indicating the measurement scale for the item. This value is 3 digits.
OrderFormDoc.OrderItemList.OrderItem. VaShipAmt	Amount of tax applied to freight or shipping charges. The amount specified can be up to 15 digits. For VGIS transactions, must be zero, or must not be used.
OrderFormDoc.OrderItemList.OrderItem. VaShipRate	Rate at which shipping charges are taxed. The rate can be a number up to 5 digits, and the precision can be 5 digits.
OrderFormDoc.OrderItemList.OrderItem. Weight	Specifies the weight of an item. Up to 7 digits.

Table 4-1 Authorization Input (Page 7 of 10)

Field	Expected Value
PayerAuthentication Fields	
OrderFormDoc.Transaction. PayerSecurityLevel	<p>Provides information about the results of a payer authentication attempt. This field is used to populate the Electronic Commerce Indicator (ECI). Depending on the merchant's region and card brand, liability shift may be possible under many scenarios.</p> <p>0 Payer Authentication is not supported by the merchant. No liability shift will take place and the transaction will be treated as a standard e-commerce transaction.</p> <p>1 Payer authentication supported, but cardholder not enrolled. During 3-D Secure authentication, it is determined that the cardholder is not currently enrolled in a 3-D Secure based authentication program for Verified by Visa or SecureCode.</p> <p>2 Payer authentication supported. Authentication succeeded. For 3-D Secure, the transaction is eligible for chargeback protection.</p> <p>(Continued next page)</p>

Table 4-1 Authorization Input (Page 8 of 10)

Field	Expected Value
OrderFormDoc.Transaction. PayerSecurityLevel	<p>(continued)</p> <p>3 Payer Authentication Failed. Payer authentication has failed for reasons such as an incorrect password or an authentication results validation failure.</p> <p>Visa policies dictate that the transaction must not be submitted, and an alternate payment method should be requested. Attempting to send in a transaction with this security level will result in rejection by the ClearCommerce Engine.</p> <p>Failed MasterCard payer authentication transactions can still be submitted. In most cases, do not send any payer authentication data. However, some processors allow payer authentication values to be sent. Refer to the appropriate Payment Reference for more information about MasterCard support.</p> <p>4 Authentication results are unavailable. The merchant is authentication enabled, but no authentication results are available. This may occur in a 3-D Secure environment if there is a failure in communicating or interpreting results from any part of the infrastructure, such as the Merchant Server Plug-In (MPI), Directory Server (DS), or Access Control Server (ACS).</p> <p>5 Payer authentication supported, but the card is not in a participating BIN range. The cardholder is not enrolled in a payer authentication program.</p> <p>6 For brands supporting attempts processing using 3-D Secure. The cardholder was authenticated using the 3-D Secure attempts server. For 3-D Secure, the transaction is eligible for chargeback protection.</p>

Table 4-1 Authorization Input (Page 9 of 10)

Field	Expected Value
OrderFormDoc.Transaction. PayerAuthenticationCode	<p>The value in this field originates from the server that performs the cardholder authentication. It is used as proof that the verification process took place.</p> <p>For Verified by Visa transactions, the PayerAuthenticationCode field populates the Cardholder Authentication Verification Value (CAVV). For SecureCode transactions, the field populates Accountholder Authentication Value (AAV).</p> <p>For Visa, Electron, Maestro, UK Maestro, Solo, and MasterCard SecureCode transactions authenticated using 3-D Secure, this value must be a 28-byte, base 64-encoded string.</p> <p>For MasterCard SecureCode transactions authenticated using PC Authentication, this value must be a 32-byte, base 64-encoded string.</p>
OrderFormDoc.Transaction. PayerTxnId	<p>Optional. A unique payer authentication transaction number that is generated by the merchant plug-in (MPI). In the 3-D Secure protocol, this value is known as the Transaction Identifier (Purchase.xid).</p> <p>For Visa and MasterCard transactions authenticated with 3-D Secure, this value must be 28 bytes and Base64 encoded.</p> <p>This field can be specified for SecureCode PC Authentication transactions, but the value is not sent to the payment processor. The value will be stored in the database.</p>
Point of Sale (POS) Fields	
<p>Note: If a POS value is not included in the OrderFormDoc, the default value is inserted into the transaction record.</p>	
OrderFormDoc.Transaction. CardholderPresentCode	<p>This value must be set to 13 for payer authentication transactions.</p> <p>The default value is 7, card not present (electronic transaction). See “CardholderPresentCode” on page 50 for more information.</p>

Table 4-1 Authorization Input (Page 10 of 10)

Field	Expected Value
OrderFormDoc. Transaction. SecurityIndicator	Specifies the security level between cardholder and merchant. 7 - Indicates the channel is SSL encrypted. This is the only value currently supported. See “POS Characteristics” on page 49.
OrderFormDoc. Transaction. TerminalInputCapability	Specifies the input capability of the terminal. The default value is 1 , indicates that the terminal is capable of manual keyed entry only. See “POS Characteristics” on page 49.

POS Characteristics

Values for POS characteristics can be specified in the OrderFormDoc for the transaction; if no values are sent, the default value for each characteristic become part of the transaction record.

The POS characteristic fields supported by the ClearCommerce Engine for Barclaycard are:

- CardholderPresentCode
- SecurityIndicator
- TerminalInputCapability

CardholderPresentCode

The CardholderPresentCode describes whether or not the cardholder with the card is physically present at the time of purchase. Because transactions processed through the Clear Commerce Engine are Internet-based, the most likely value is 7, Home PC/Internet. This is the default value.

Important: For periodic billing, the first transaction must have a value of either 3 or the default, 7. Each subsequent periodic billing transaction must have the value of 8 or 10.

For payer authentication, the CardholderPresentCode value must be 13. In addition, the value of PayerSecurityLevel must be 2.

Transactions with the Maestro or UK Maestro card types must have a CardHolderPresent code of 13.

Table 4-2 CardholderPresentCode Values (Page 1 of 2)

CCE Value	Description
1	Cardholder is present; swipe data submitted instead of card number & expiry
2	Cardholder is present; swipe data submitted instead of card number & expiry. The cardholder signature is obtained.
3	Card not present (generic mail-order, direct marketing value)
4	Card not present (order placed by mail or fax)
5	Card not present (order placed by phone)
6	Card not present (floor limit/ force-authorized)
7	Card not present (eCommerce/Internet transaction) (default)
8	Card not present (recurring transaction)
9	Card not present (with AVS request)
10	Card not present (installment)

Table 4-2 CardholderPresentCode Values (Continued) (Page 2 of 2)

CCE Value	Description
11	Card not present (SET, with merchant and cardholder certificate)
12	Card not present (SET, with merchant certificate only)
13	Card not present, but authentication was used
14	Cardholder present, but card information manually keyed

SecurityIndicator

The default value, 7, indicates that the channel is SSL-encrypted. This is the only value currently supported. The following table defines the SecurityIndicator values.

Table 4-3 SecurityIndicator Values

CCE Value	Description
0	Terminal type unknown
1	Unsecure link
2	SET with merchant certificate only (no cardholder certificate)
3	SET with merchant and cardholder certificate
4	SET with Chip, cardholder, and merchant certificate present
5	SET with Chip and merchant certification present
6	SSL / Channel-encrypted, w/o Chip or cardholder certification
7	SSL / Channel-encrypted (default)

TerminalInput Capability

Specifies the input capability of the terminal. This is a required field for the POS transactions. The default value is 1, indicating that capability is manual, with no terminal. The following table defines the TerminalInputCapability values.

Table 4-4 TerminalInputCapability Values

CCE Value	Description
0	Terminal capability unknown
1	Terminal is capable of manual keyed entry only (default)
2	Terminal can only read magnetic stripe
3	Terminal can read magnetic stripe, and/or EMV-compatible Integrated Chip Cards
4	Terminal can read magnetic, or accept manual keyed entry
5	Terminal can read magnetic stripes, EMV-compatible Integrated Chip Cards, or accept manual keyed entry
6	Terminal can only read EMV-compatible Integrated Chip Cards
7	Terminal reads Tracks 1 and/or 2, and supports entry and encryption of PIN
8	Terminal can read and transmit Track 1
9	Terminal reads Tracks 1 and/or 2, and supports entry and encryption of PIN (32-byte)
10	Terminal reads Tracks 1 and/or 2, and supports entry and encryption of PIN (32-byte DUKPT)

Authorization Responses

Authorization responses are returned in the stream of data that comes back from Barclaycard. The returned data is parsed by the Engine and inserted into the OrderFormDoc. Authorization responses also are displayed through a store's order reports.

Data inserted into the OrderFormDoc includes the following fields.

Table 4-5 Authorization Responses (Page 1 of 2)

Field	Value
General Fields	
Transaction ID	This value is always generated by the ClearCommerce Engine. It is overwritten if a value is supplied. Valid for approved, declined and referred transactions, as well as those with transmission errors.
Total	The current total of the order.
AuthCode	6-digit authorization code. Valid for approved transactions only.
CcErrCode	Valid for approved, declined, and referred transactions.
CcReturnMsg	64 character normalized card processor error text.
ProcReturnCode	Valid for approved, declined, and referred transactions.
CardProcRespTime	Timestamp when a payment transaction is authorized by a card processor; expressed in number of milliseconds since 1970
ProcReturnMsg	String returned from the processor. Maximum of 64 characters. Valid for approved, declined, and referred transactions.
Address Verification Service (AVS) Fields	
AvsDisplay	The normalized AVS text. Refer to "AVS Responses" on page 56.
AvsRespCode	The normalized AVS response codes.

Table 4-5 Authorization Responses (Page 2 of 2)

Field	Value
ProcAvsRespCode	The raw (unnormalized) AVS response from the payment processor.
Card Verification Method (CVM) Field	
Cwv2Resp	Valid for approved transactions only. Refer to “CVM Responses” on page 57.
Payer Authentication Field	
PayerAuthenticationResultCode	<p>A normalized payer authentication result code. This field is used for Verified by Visa transactions only.</p> <ul style="list-style-type: none"> 0 PayerAuthenticationCode not validated. 1 PayerAuthenticationCode not validated due to erroneous data submitted. 2 PayerAuthenticationCode failed validation (generic). 3 PayerAuthenticationCode passed validation. 4 PayerAuthenticationCode validation could not be performed. Issuer attempt incomplete. 5 PayerAuthenticationCode validation could not be performed. Issuer system error.

Processor Codes and Messages

The ProcReturnCode field contains the original processor error code, if one is received. The CcErrCode field contains an Engine-normalized version of the return code or Engine status. The ClearCommerce Engine also might generate errors associated with payment. The following table shows these

error codes. The ProcReturnCode field contains the original processor error code. The CcErrCode field contains an Engine-normalized version of the error code.

Table 4-6 Return Messages

ProcReturn Code	CcErr Code	Definition
00	1	Authorized
02	3	Referred
05	50	Declined (general)
30	50	Error Condition
(unknown)	1054	none

The ClearCommerce Engine also might generate errors associated with payment processing. The following table shows these error codes.

Table 4-7 Normalized Engine Return Codes

CcErrCode	Description
51	Connection timed-out.
52	Error connecting to processor or sending data.
53	Error during Payment Commit phase.
54	Timed out waiting for response.

AVS Responses

An AVS response is returned for each successful transaction to Barclaycard. The ProcReturn Code is the raw response from the processor. The AVSRespCode field contains the normalized processor AVS code. The AVSDisplay field contains the ClearCommerce Engine-normalized version of the AVS code for display purpose.

Table 4-8 AVS Responses (Page 1 of 2)

Processor Response Code (ProcReturnCode)	Normalized AVS Response Code (AVSRespCode)	Normalized AVS Display Code (AVSDisplay)	AVS RespCode Description
02, 12	B1	YN	Postal code not checked; address match
04, 14	B2	NN	Postal code not checked; address no match
08, 18	B3	NN	Postal code not checked; address partial match
20, 21	B4	NY	Postal code match; address not checked
22	EX	YY	Address and Postal code match
24	B5	NY	Postal code match only; address no match
28	B6	NY	Postal code match only
40, 41	B7	NN	Postal code no match; address no match
42	B8	YN	Postal code no match; address match
44	N	NN	None match
48	B9	NN	Postal code no match; address partial match
80, 81	BA	NN	Postal code partial match; address not checked

Table 4-8 AVS Responses (Page 2 of 2)

Processor Response Code (ProcReturnCode)	Normalized AVS Response Code (AVSRespCode)	Normalized AVS Display Code (AVSDisplay)	AVS RespCode Description
82	BB	YN	Postal code partial match; address match
84	BC	NN	Postal code partial match; address no match
88	BD	NN	Postal code partial match; address partial match
00, 01, 10, 11, no response	S1	(blank)	AVS not checked
All other values	7	UU	Response not valid

An AVS response other than YY does *not* cause a transaction to be approved or declined; the information is made available to the merchant, and it is up to the merchant to decide whether or not to take action based on the information.

For details on AVS and AVS display values, refer to the *Store Administrator Guide*.

CVM Responses

A CVM value is returned for each successful transaction to Barclaycard.

Note: Because implementation of CVM is not supported yet by all cards, many transactions will not include this information

Table 4-9 CVM Responses (Page 1 of 2)

CVM Response	CCE Response	Description
2	1	CVM match
4	2	CVM does not match issuer value
0, 1	3	CVM was not processed

Table 4-9 CVM Responses (Page 2 of 2)

CVM Response	CCE Response	Description
Unknown	6	CVM invalid or missing
X	7	No response from server

Engine Log

Engine logging performs run-time tracing and stores the results in a log file. Examining the Engine log can help you troubleshoot when transactions do not complete as expected.

By default, the log file resides in the current working directory for the Director and is named CcxEngine.log; however, you can configure the name and location of the log file using the System Administrator Tool. Refer to the *System Administrator Guide* for detailed information concerning the Engine log.

Order Reports

Authorization responses are displayed through a store's order reports. Merchants can view the reports for their own stores only. See the *Store Administrator Guide* for details. Account Administrators can view order reports for all merchants hosted on their ClearCommerce Engine. Refer to the *Account Administrator (CSP) Guide* for details.



Chapter 5

Settlement with Barclaycard

The final step in the payment process is settlement—settling the order between the merchant and the card processor. Sales and Credits usually accumulate into a batch and are settled as a group. For that reason, settlement is sometimes referred to as batch. The mechanism used for settlement with Barclaycard is called bulk settlement. The ClearCommerce Engine combines multiple stores' batches and forwards the data to Barclaycard. Then, Barclaycard forwards the information to the appropriate issuing authority, which transfers Sales money from the cardholder's account to the merchant's account, and does the opposite for Credits.

Bulk settlement consists of two stages:

- Settlement at the Store entity level can be set to run automatically once each 24 hours (generally each night), but also can be manually initiated from the Store Administrator Tool. When the Settle transaction is initiated, transactions are marked to be included the next time bulk settlement to Barclaycard is initiated by the account administrator.
- Secondly, when the account administrator initiates bulk settlement, all transactions marked Bulk Ready are collected and sent to Barclaycard for settlement, along with transactions for other stores that also settle to

Barclaycard. Although transactions for more than one store are sent in a single batch, transactions continue to be identified with a store throughout the process.

Important: Confirm with store administrators what time the account administrator initiates bulk settlement to Barclaycard. The store administrator's part of the process should be completed before bulk settlement begins, to ensure that all transactions are settled as promptly as possible.

Settlement Process

Figure 5-1 and the following steps explain the basic settlement process.

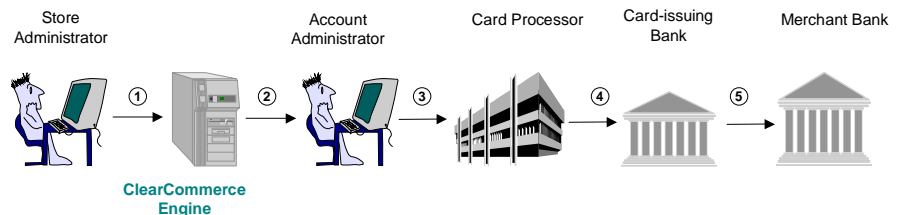


Figure 5-1 Settlement process flow

- 1** Settlement for the store is initiated either automatically on the Engine or manually using the Store Administrator Tool or the API. All transactions in the store's batch are marked Bulk Ready.
- 2** Bulk settlement is initiated either automatically on the Engine or manually by the account administrator using the Account Administrator (CSP) Tool or the API. All transactions marked Bulk Ready are collected.
- 3** The ClearCommerce Engine packages the information according to Barclaycard's protocol and specification, and then transmits the batch transaction to Barclaycard.
- 4** Barclaycard forwards the transaction information to the card-issuing authority, which ultimately transfers the funds from the cardholder's account to the merchant's account and bills the cardholder for the transaction amount.
- 5** The actual transfer of money occurs 24 to 48 hours after settlement.

Settlement Input

The following table shows the input information needed to initiate Settlement.

Table 5-1 Settlement Input

Field	Expected Value
Mode	<p>The ClearCommerce Engine supports a mode that is used in a production environment and four modes for testing a transaction.</p> <p>P Production mode; real transactions are processed by card processor.</p> <p>Y Simulation mode; always generates an approval.</p> <p>N Simulation mode; always generates a decline.</p> <p>R Simulation mode; random responses.</p> <p>T Transactions are sent to the card processor's test system.</p> <p>Refer to Chapter 3, "Payment Testing" on page 35 for information on modes other than production.</p>

Settlement Responses

When the settlement data is transferred from the Engine to Barclaycard, messages about the transfer might be recorded in the Engine log. In addition, a settlement summary response contains information about the status of each batch in a bulk settlement.

Details about Engine logs and Settlement summaries and reports follow.

Engine Log

The Engine log records data from operations and actions performed by the ClearCommerce Engine, Director, and components. Depending on the level of logging that has been configured on the Engine, this information might be helpful for debugging settlement problems.

See the *System Administrator Guide* for information about the Engine log, Engine Director, and other components.

Settlement Summary

The Settlement Summary displays the status of the batches that are included in the bulk settlement. Account administrators can view the Settlement Summary for all stores they host. See the *Account Administrator (CSP) Guide* for details.

The Settlement Summary displays for the bulk settlement IDs that satisfies the query:

- Settlement ID for the bulk settlement batch
- Status (for example, Approved)
- Time
- Credit Approved displays the total number of approved Credit transactions in the settlement
- Credit Declined displays the total number of declined Credit transactions in the settlement
- Sale Approved displays the total number of approved Sale transactions in the settlement
- Sale Declined displays the total number of declined Sale transactions in the settlement

Each bulk settlement ID in the Settlement Summary is a link to a Client Detail report displaying information about each of the *store* settlement IDs included in that bulk settlement. (This is not available if the transaction counts are zero or if the query returned only Cancelled bulk settlement batches.)

The store Settlement IDs are *not* links; the user cannot link from this screen to see the transactions contained in the store's batch. The user can, however, click the Client ID to link to the Store Administrator Tool for that store.

See the *Account Administrator (CSP) Guide* for details about using the Settle Summary and Client Detail reports.

Settlement Reports

Store-level Settlement reports are viewed using the Store Administrator Tool. Merchants can view the reports for only their own stores.

In a Settlement report, each batch is identified by a settlement ID and the following information is displayed:

- Status (for example, Approved)
- Time
- Credit Total (after settlement, total of money moved from a merchant's account to a customer's account)
- Sale Total (after settlement, total of money moved from the customer's account to merchant's account)
- Total (Credits and Sales together)

To review each transaction that is included in a batch, click the settlement ID. For *each* transaction, the following information is displayed:

- Type (charge type code—Sale or Credit)
- Status (transaction status—Settled, Soft Settle Error, Hard Settle Error, or Locked Transaction)
- Transaction ID
- Time (settlement time)
- Card Number (first 4 and last 4 digits of the credit card number)
- Capture Amount

For *all* transactions contained in a batch, the page total and grand total also are displayed. See the *Account Administrator (CSP) Guide* for details about using the Settlement reports.

Settlement Problems

Settlement reports can be reviewed to verify that all transactions settled successfully. Successfully settled transactions display the status “Settled.” Examine the report for transactions marked with one of these statuses:

- Soft Settle Error
- Hard Settle Error
- Locked transaction

Transactions marked “Soft Settle Error” are automatically included in the next batch for settlement. Transactions marked “Hard Settle Error” or “Locked” require intervention to resolve.

Refer to the *Account Administrator (CSP) Guide* for information on recovering from settlement errors.

Resubmitting Failed Settlement Files

Barclaycard supports manual resubmission of failed bulk settlement transactions in the soft-settle(SS)state.

The Resettle transaction type is available to the corresponding bulk-level entity. For Barclaycard this is at the CSP level. Unlike the bulk-level Settle transaction, ReSettle does not require that storefronts re-settle their transactions. That is, storefronts are not required to first put their transactions in a pending-bulk state via storefront settlement. ReSettle collects and resubmits all transactions associated with the bulk-settlement id with a transaction status of soft-settle (SS).

Refer to the *Account Administrator (CSP) Guide* for information on resubmitting failed settlement files.



Chapter 6

Implementing VGIS

The ClearCommerce Engine and Barclaycard support the Visa Global XML Invoice Specification (VGIS). VGIS is aimed at commercial card users who seek to exchange business-to-business invoice and payment data.

Getting Started

Details on supported functionality are provided later in this chapter. Be sure you understand these requirements before you start your VGIS implementation.

Important: You must ensure that you have been fully approved by Barclaycard Merchant Services (BMS) for VGIS before submitting any VGIS data. BMS will confirm your approval and will advise when you are able to submit transactions with VGIS data. Any VGIS data submitted prior to your approval will not be passed in the authorization message and may lead to the transaction being declined.

If you wish to use VGIS for business transactions, you should contact the Implementation Manager within BMS Retail Technology on 01604 253121. You will be required to undertake VGIS testing with BMS to ensure that you adhere to the card scheme standards.

VGIS Transactions and the ClearCommerce Engine

Most VGIS XML element (exceptions are noted) have a corresponding ClearCommerce Engine API field. To ensure a transaction is VGIS-compliant, integrators must submit to the ClearCommerce Engine all OrderFormDoc fields that correspond to required VGIS elements.

If the VisaCommercialCardDataAllowed flag is set for a store, and if a Visa enhanced-data commercial card number is submitted with a transaction, the Engine assumes the transaction is a VGIS transaction and validates it to ensure that it is VGIS compliant. If required fields are missing or the data submitted fails to meet the required standards, the Engine rejects the transaction; if the transaction passes validation, the ClearCommerce Engine stores the VGIS data in the database. Although this data is collected during authorization, the Engine submits to Barclaycard the complete VGIS XML document only during settlement.

VGIS Related Documentation

In addition to this payment reference, consult the following ClearCommerce publications in order to successfully implement VGIS using the ClearCommerce Engine:

- Refer to the ClearCommerce Engine *API Reference and Guide* for documentation on VGIS XML elements and corresponding API fields. A chapter titled “Visa Global XML Invoice Specification” contains a table that maps VGIS elements to ClearCommerce Engine API fields.
- For complete information on API fields, refer to the *Document Hierarchy Reference: OrderForm Docs*.

For general information about the VGIS specification, refer to the following:

- The Visa Global XML Specification is available on the Visa Web site at www.visa.com/xml. Supporting documentation is also available.
- Barclaycard may also have VGIS-related documentation that they can provide. Contact the Implementation Manager within BMS Retail Technology to inquire.

Supported and Unsupported Functionality

ClearCommerce and Barclaycard have endeavored to implement the VGIS specification as fully as possible. This section details functionality supported by the ClearCommerce Engine and Barclaycard. In the event of a conflict between this document and either the *API Reference and Guide* or the *Document Hierarchy Reference*, this payment reference takes precedence and should be considered authoritative.

Card Types and Payment Methods

VGIS support is provided for Visa Commercial cards only. This includes Visa Purchasing, Visa Corporate, and Visa Business card types.

The following VGIS payment methods <PaymentMean> are not supported:

- Cash (PaymentMean = 10)
- Check (PaymentMean = 20)
- Credit transfer (PaymentMean = 30)
- Other (PaymentMean = Other)

Barclaycard Processor Interface

Barclaycard accepts Visa Commercial card transactions using the Barclaycard GBP processor interface only. For this reason, then, only the GBP interface supports VGIS transactions. The MC (multi currency) processor interface does not support VGIS transactions.

Industry Types

VGIS support is provided for the Miscellaneous Merchant sector only. Within this sector, only e-commerce and mail order / telephone order transactions are supported. Sub line items are not supported for the Miscellaneous Merchant sector.

Currencies

VGIS support is provided for GBP (pounds sterling) transactions only.

VGIS Invoice Treatment

Barclaycard's VGIS implementation supports both printed and electronic invoices. The ClearCommerce Engine, however, cannot provide printed or electronic copies of invoices. The Engine only outputs VGIS-compliant XML as part of a settle transaction.

Tax Function

Barclaycard only supports the VGIS Tax Function value “7” (Tax). Tax is the only VGIS Tax Function supported.

Tax Type

Barclaycard only supports the VGIS Tax Type value VAT. VAT is the only VGIS Tax Type supported.

Tax Category

Barclaycard supports four tax category types: Standard (S), Reduced (AA), Zero (Z), and Exempt (E). VGIS Tax Category types A and G are currently not supported.

Tax Treatment Support

Barclaycard supports three VGIS tax treatment types:

- **NIL** - Net Invoice Level. With this tax treatment type, line item (a.k.a. order item) amounts are net amounts, and tax is calculated at the invoice level.
- **NLL** - Net Line Level. With this tax treatment type, line item amounts are net amounts, and tax is calculated at the line item level.
- **NON** - No tax is associated with the invoice.

Tax treatment types **GIL** and **GLL** are not supported.

VGIS Party Type Support

Barclaycard supports the following five VGIS Party element types:

- **BY** - Buyer, the end consumer. Contains the buyer's bill-to information. Optional field.
- **DP** - Delivery party, the ship-to party. Optional field.
- **SU** - Supplier, the merchant. Required field.
Note: The ClearCommerce Engine API supports only one instance of the Contact container within the SU Party element.
- **PI** - Merchant information in addition to the information supplied in the "SU" Party element. Required field.
- **CO** - Supplier's head office information where different from the Party "SU" information. Optional field.

VGIS Party "SF" (ship-from party) is not supported.

Discount Treatment Support

Barclaycard supports three VGIS discount treatment types:

- **UN** - Net Line Item Price, discount applied
- **UG** - Gross Line Item Unit Price, discount not applied
- **TN** - Line Item Subtotal, discount applied

VGIS Part Number Support

Barclaycard supports the following part number <PartNumDetail> types:

- **CC** - Industry commodity code and description for the item. UNSPSC commodity codes are recommended. (See, www.unspsc.org for more information.)
- **VP** - Supplier or merchant product code for the item, including description.
- **BP** - Buyer's product code for the item, including description.

Transaction Line Item Support

Barclaycard allows a maximum of 300 line items per transaction. Sub line items are not supported for the Miscellaneous Merchant sector.

While the VGIS specification allows ten-digit line item numbers (maximum value 9999999999), the ClearCommerce Engine only supports five-digit line item numbers. Line item numbering may not exceed 99999 (maximum 5 digits). However, VGIS and the CCE API also permit the submission of the line number on a customer's receipt, invoice, or original purchase order as OrderFormDoc.OrderItemList.OrderItem.PoItemNumber. The equivalent VGIS XML element is <InvoiceDetails><POLineNum>. The ClearCommerce Engine supports numbers up to 999999999 (maximum 9 digits) for this field.

Enabling VGIS

To enable VGIS for a store, you must assign values to the following fields using either the Store Administration Tool or a ConfigDoc:

- VisaCommercialCardDataAllowed
- VisaStoreCompanyName
- VisaStoreCity
- VisaStorePostalCode
- VisaStoreCountry

VisaCommercialCardDataAllowed must be set to 1. By default, this field is set to 0. A value of 0 indicates that a storefront has not been authorized by BMS to send VGIS data, whereas a value of 1 indicates that a storefront is authorized by BMS to send VGIS data.

Before you can enable VGIS for a store, you must receive approval from Barclaycard Merchant Services. See the notice at the beginning of this chapter (page 65) for more information.

By default, only the SuperUser role has the permissions necessary to change the VisaCommercialCardDataAllowed value. If necessary, this permission can be added to other roles using the System Administrator Tool (click **Access Control**, select a role and click **Update**, select **Configuration -**

Payment/Processor in the **Permissions** list, and select the **Add** check box next to the **Barclaycard VISA Commercial Card Configuration** item in the **Resource** list).

Important: If your storefront is authorized to perform VGIS transactions, and an enhanced data Visa Commercial Card transaction is submitted without VGIS data, Barclaycard Merchant Services will reject the transaction.

Enabling VGIS Using the Store Administration Tool

To enable VGIS from the Store Administration Tool, do the following:

- 1 Log in to the Store Administration Tool. Make sure your role has the required permission to change the VisaCommercialCardDataAllowed value (see above).
- 2 Click **Administration**.
- 3 On the left-hand side of the page, click **Processor** (under the **Payment** heading).
- 4 Click **Add** or **Edit** next to **Barclaycard GBP**.

If you are adding the Barclaycard GBP processor, you will also need to enter values for **MerchantId**, **TerminalIdPool**, **SortCode**, and **AccountNumber**. For more information, see “Processor Configuration - Store” on page 31. You can also click **Help** in the Store Administration Tool. The Help topic for the Barclaycard GBP processor page is located here:

[Administration/Payment/Processors/FieldInformation/BarclaycardGBP](#)

- 5 Enter a name in the **VisaStoreCompanyName** box. The name must be 60 characters or less.
- 6 Enter a city in the **VisaStoreCity** box. The city name must be 35 characters or less.
- 7 Enter a postal code in the **VisaStorePostalCode** box. Postal codes must be 35 characters or less.
- 8 Enter a country code in the **VisaStoreCountry** box. Country codes must be 3 digits in length. Refer to Appendix A, “Country Codes”, for a list of valid codes.

- 9 To enable VGIS transactions, update the value for **VisaCommercialCardDataAllowed** to 1.
- 10 Click **Update** to save.

Enabling VGIS Using a ConfigDoc

The following is the expected format of a configuration document sent in to configure the store for VGIS:

```
<ConfigDoc>
  <CompList>
    <Comp Name="CcxPayment">
      <ConfigActionList>
        <ConfigAction Action="Update" Name="PaymentConfig">
          <ValueList>
            <Value
              MerchantId="43048304927"
              ProcessorName="BARCLAYS_GBP"
              TerminalIdPool="12345678-12345699"
              VisaCommercialCardDataAllowed="1"
              VisaStoreCompanyName="Boots"
              VisaStoreCity="Austin"
              VisaStorePostalCode="78759"
              VisaStoreCountry="840"
            />
          </ValueList>
        </ConfigAction>
      </ConfigActionList>
    </Comp>
  </CompList>
</ConfigDoc>
```



Chapter 7 Engine API

Features of the ClearCommerce Engine or its components can be configured through the API with a ConfigDoc. Components are usually configured when the Engine is installed or when an administrator configures settings from the System Administrator Tool, Account Administrator (CSP) Tool, or Store Administrator Tool. For example, a store must be configured to route transactions to a payment processor, such as Barclaycard. Although the task of setting up payment processors is usually accomplished from the Store Administrator Tool, it can also be accomplished by using a ConfigDoc. For detailed information on using ConfigDocs, see the *ClearCommerce Engine API Reference and Guide*.

Document Routing

Every document must contain routing information so that the ClearCommerce Engine can send the document to the proper component or components. A ConfigDoc is usually routed to a single component. The possible routing list values for Barclaycard are:

- CcxBarclaysMcAuth
- CcxBarclaysMcAuthTest
- CcxBarclaysMcSettle
- CcxBarclaysMcSettleTest
- CcxBarclaysGbpAuth
- CcxBarclaysGbpAuthTest
- CcxBarclaysGbpSettle
- CcxBarclaysGbpSettleTest

For additional payment routing information, refer to the “Payment” chapter in the *ClearCommerce Engine API Reference and Guide*.

Component Configuration

Some ClearCommerce Engine components include command line key/value pairs. These keys are usually defined when the ClearCommerce Engine is installed and configured. For more information about these command line keys, refer to the *System Administrator Guide*. The following table lists the fields used to configure the CcxBarclaysGbpAuth and CcxBarclaysMcAuth components with a ConfigDoc.

Table 7-1 Authorization API Key/Value Pairs (Page 1 of 3)

Key Name	Datatype	Description/Values
ConfigDoc.CompList.Comp. Name	String	Required. Must always be Director .
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. Name	String	Required. Must always be dir_comp_config
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. CompName	String	Required. Must always be CcxBarclaysGbpAuth or CcxBarclaysMcAuth .
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. PrimaryHost	String	Barclaycard host to connect to. Must be a valid fully qualified host name or a valid <i>IP address</i> . The default value is localhost . This value must be replaced following installation.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. PrimaryHostPort	String	A valid port to connect to the primary host. The default value is 2113 . This value must be replaced following installation.

Table 7-1 Authorization API Key/Value Pairs (Page 2 of 3)

Key Name	Datatype	Description/Values
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. SecondaryHost	String	Optional host when primary host is not available. Must be a valid fully qualified host name or a valid IP address. The default value is localhost . Note: If there is no SecondaryHost name, then enter the PrimaryHost name in the SecondaryHost name field. The PrimaryHost is tried one time before trying the SecondaryHost, so using the SecondaryHost this way allows the Engine another attempt to connect to the PrimaryHost.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. SecondaryHostPort	String	Port to connect to for secondary host. Must be a valid port number. The default value is 2113 . Note: If there is no SecondaryHostPort name, then enter the PrimaryHostPort name in the SecondaryHostPort name field. The PrimaryHostPort is tried one time before trying the SecondaryHostPort, so using the SecondaryHostPort this way allows the Engine another attempt to connect to the PrimaryHostPort.

Table 7-1 Authorization API Key/Value Pairs (Page 3 of 3)

Key Name	Datatype	Description/Values
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. NumConnections	String	Number of separate connections to the remote host to establish or manage. Minimum 1, maximum 250. The default value is 1. Note: If no value is provided, then 1 is the default. If a value less than or equal to 0 is provided, 1 is used. If the value is greater than 250, then 250 is used. If a number in the range $1 \leq x \leq 250$ is provided, then that number is used.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. MaxResponseWaitTime	String	Maximum number of seconds to wait for processor response before considering processor timed out. Minimum 1 second, maximum 300 seconds. The default value is 30 .

Table 7-2 Settlement API Key/Value Pairs (Page 1 of 2)

Key Name	Data Type	Description/Values
ConfigDoc.CompList.Comp. Name	String	Required. Must always be Director .
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. Name	String	Required. Must always be dir_comp_config
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. CompName	String	Required. Must always be CcxBarclaysGbpSettle or CcxBarclaysMcSettle .

Table 7-2 Settlement API Key/Value Pairs (Page 2 of 2)

Key Name	Data Type	Description/Values
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. PrimaryHost	String	Barclaycard host to connect to. Must be a valid fully qualified host name or a valid <i>IP address</i> . The default value is localhost . This value must be replaced following installation.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. PrimaryHostPort	String	A valid port to connect to the primary host. The default value is 2113 . This value must be replaced following installation.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. NumConnections	String	Number of separate connections to the remote host to establish or manage. Minimum 1, maximum 10. The default value is 1 . If no value is provided, then 1 is the default. If a value less than or equal to 0 is provided, 1 is used. If the value is greater than 10, then 10 is used. If a number in the range $1 \leq x \leq 10$ is provided, then that number is used.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. NumSettleThreads	String	Number of concurrent settlement transactions. Minimum 1, maximum 10. The default value is 1 .

Processor Configuration

The following table lists the attributes that fields can have when the processor is Barclaycard. These fields are part of ConfigDocs that are routed to the CcxPayment component. ConfigDocs cannot be routed to any Barclaycard component. For more information about ConfigDocs, refer to the “Using ConfigDocs” chapter of the *ClearCommerce Engine API Reference and Guide*. Refer to “Store Creation” on page 29 for information on setting these values in the Store Administrator Tool.

Table 7-3 Processor Configuration Fields (Page 1 of 3)

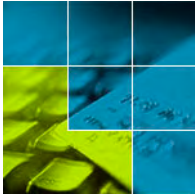
Key Name	Data Type	Description/Values
ConfigDoc.CompList.Comp. Name	String	Required. Must always be CcxPayment
ConfigDoc.CompList.Comp. ConfigActionList. Name	String	Required. Must always be PaymentConfig
Store Processor Configuration		
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction.ValueList. Value. MerchantId	String	Required. 2- to 11-character merchant identifier assigned by Barclaycard.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction.ValueList. Value. TerminalIdPool	String	8- to 256-character identifier that represents one or more identifiers assigned to the merchant by Barclaycard. Terminal identification can be specified as a comma separated list, as a range using a dash, or both. The following example defines a list that includes terminal IDs 00000000 and 00000002 through 00000006. 00000000, 00000002 - 00000006
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction.ValueList. Value. ExchangeRate	String	1- 10-character value that indicates the exchange rate from local currency to Euro. For stores that support Euro.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. ExchangeToCurrCode	String	3-character Currency Code that indicates the local currency. For stores that support Euro.

Table 7-3 Processor Configuration Fields (Page 2 of 3)

Key Name	Data Type	Description/Values
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. SortCode	String	6-digit Sorting Code required for settle transactions. Assigned by Barclaycard.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. AccountNumber	String	Required. 8-digit account number required for settle transactions. Assigned by Barclaycard.
Store VGIS Configuration		
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. VisaCommercialCardDataAllowed	String	Required for VGIS transactions. Indicates whether Visa Enhanced Data Commercial cards will be accepted for VGIS transactions.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. VisaStoreCompanyName	String	Required for VGIS transactions. The store's name as it is known to Visa.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. VisaStoreCity	String	Required for VGIS transactions. The city where the store is located (as reported to Visa).
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. VisaStorePostalCode	String	Required for VGIS transactions. The store's postal code (as reported to Visa).
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. VisaStoreCountry	String	Required for VGIS transactions. The country where the store is located (as reported to Visa).
Account Administrator Processor Configuration		
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. PosId	String	Required. 10-character POS Id assigned by Barclaycard. Must be in the format POSxxxxxxx, where x is a digit.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. VolSerialPrefix	String	Required. 3-letter field that specifies Volume Serial Prefix. Assigned by the Account Administrator.

Table 7-3 Processor Configuration Fields (Page 3 of 3)

Key Name	Data Type	Description/Values
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. FtpSuffix	String	3-digit code used as the suffix of the FTP destination file name. Required and assigned by Barclaycard for each POS Id.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. FtpSuffixTest	String	3-digit code used as the suffix of the FTP destination file name. Required and assigned by Barclaycard for each test POS Id.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList.Value. FtpUserName	String	Required. Up to 32-character user name for FTP settlement assigned by Barclaycard.
ConfigDoc.CompList.Comp. ConfigActionList.ConfigAction. ValueList. Value. FtpPassword	String	Required. Up to 32-character password for FTP settlement assigned by Barclaycard. Valid for both FTP user names.



Appendix A

Country Codes

Countries are listed alphabetically by name. The countries, abbreviations, and country codes listed in this appendix are from ISO 3166.

Table A -1 (Page 1 of 12)

Country	Number	Abbreviation
United States	840	US
Afghanistan	004	AF
Aland Islands	248	AX
Albania	008	AL
Algeria	012	DZ
American Samoa	016	AS
Andorra	020	AD
Angola	024	AO
Anguilla	660	AI
Antarctica	010	AQ
Antigua and Barbuda	028	AG
Argentina	032	AR
Armenia	051	AM
Aruba	533	AW

Table A -1 (Page 2 of 12)

Country	Number	Abbreviation
Australia	036	AU
Austria	040	AT
Azerbaijan	031	AZ
Bahamas	044	BS
Bahrain	048	BH
Bangladesh	050	BD
Barbados	052	BB
Belarus	112	BY
Belgium	056	BE
Belize	084	BZ
Benin	204	BJ
Bermuda	060	BM
Bhutan	064	BT
Bolivia	068	BO
Bosnia and Herzegovina	070	BA
Botswana	072	BW
Bouvet Island	074	BV
Brazil	076	BR
British Indian Ocean Territory	086	IO
Brunei Darussalam	096	BN
Bulgaria	100	BG
Burkina Faso	854	BF

Table A -1 (Page 3 of 12)

Country	Number	Abbreviation
Burundi	108	BI
Cambodia	116	KH
Cameroon	120	CM
Canada	124	CA
Cape Verde	132	CV
Cayman Islands	136	KY
Central African Republic	140	CF
Chad	148	TD
Channel Islands	830	XX
Chile	152	CL
China	156	CN
Christmas Island	162	CX
Cocos (Keeling) Islands	166	CC
Colombia	170	CO
Comoros	174	KM
Congo - Democratic Republic of the	180	CD
Congo	178	CG
Cook Islands	184	CK
Costa Rica	188	CR
Cote d'Ivoire	384	CI
Croatia	191	HR
Cuba	192	CU

Table A -1 (Page 4 of 12)

Country	Number	Abbreviation
Cyprus	196	CY
Czech Republic	203	CZ
Denmark	208	DK
Djibouti	262	DJ
Dominica	212	DM
Dominican Republic	214	DO
Ecuador	218	EC
Egypt	818	EG
El Salvador	222	SV
Equatorial Guinea	226	GQ
Eritrea	232	ER
Estonia	233	EE
Ethiopia	231	ET
Falkland Islands (Malvinas)	238	FK
Faroe Islands	234	FO
Fiji	242	FJ
Finland	246	FI
France	250	FR
France - Metropolitan	249	FX
French Guiana	254	GF
French Polynesia	258	PF
French Southern Territories	260	TF

Table A -1 (Page 5 of 12)

Country	Number	Abbreviation
Gabon	266	GA
Gambia	270	GM
Georgia	268	GE
Germany	276	DE
Ghana	288	GH
Gibraltar	292	GI
Greece	300	GR
Greenland	304	GL
Grenada	308	GD
Guadeloupe	312	GP
Guam	316	GU
Guatemala	320	GT
Guinea	324	GN
Guinea-Bissau	624	GW
Guyana	328	GY
Haiti	332	HT
Heard Island and McDonald Islands	334	HM
Holy See (Vatican City State)	336	VA
Honduras	340	HN
Hong Kong	344	HK
Hungary	348	HU

Table A -1 (Page 6 of 12)

Country	Number	Abbreviation
Iceland	352	IS
India	356	IN
Indonesia	360	ID
Iran - Islamic Republic of	364	IR
Iraq	368	IQ
Ireland	372	IE
Isle of Man	833	IM
Israel	376	IL
Italy	380	IT
Jamaica	388	JM
Japan	392	JP
Jordan	400	JO
Kazakhstan	398	KZ
Kenya	404	KE
Kiribati	296	KI
Korea - Democratic People's Republic of	408	KP
Korea - Republic of	410	KR
Kuwait	414	KW
Kyrgyzstan	417	KG
Lao People's Democratic Republic	418	LA
Latvia	428	LV

Table A -1 (Page 7 of 12)

Country	Number	Abbreviation
Lebanon	422	LB
Lesotho	426	LS
Liberia	430	LR
Libyan Arab Jamahiriya	434	LY
Liechtenstein	438	LI
Lithuania	440	LT
Luxembourg	442	LU
Macao	446	MO
Macedonia - The Former Yugoslav Republic of	807	MK
Madagascar	450	MG
Malawi	454	MW
Malaysia	458	MY
Maldives	462	MV
Mali	466	ML
Malta	470	MT
Marshall Islands	584	MH
Martinique	474	MQ
Mauritania	478	MR
Mauritius	480	MU
Mayotte	175	YT
Mexico	484	MX

Table A -1 (Page 8 of 12)

Country	Number	Abbreviation
Micronesia - Federated States of	583	FM
Moldova - Republic of	498	MD
Monaco	492	MC
Mongolia	496	MN
Montserrat	500	MS
Morocco	504	MA
Mozambique	508	MZ
Myanmar	104	MM
Namibia	516	NA
Nauru	520	NR
Nepal	524	NP
Netherlands	528	NL
Netherlands Antilles	530	AN
New Caledonia	540	NC
New Zealand	554	NZ
Nicaragua	558	NI
Niger	562	NE
Nigeria	566	NG
Niue	570	NU
Norfolk Island	574	NF
Northern Mariana Islands	580	MP
Norway	578	NO

Table A -1 (Page 9 of 12)

Country	Number	Abbreviation
Oman	512	OM
Pakistan	586	PK
Palau	585	PW
Palestinian Territory - Occupied	275	PS
Panama	591	PA
Papua New Guinea	598	PG
Paraguay	600	PY
Peru	604	PE
Philippines	608	PH
Pitcairn	612	PN
Poland	616	PL
Portugal	620	PT
Puerto Rico	630	PR
Qatar	634	QA
Reunion	638	RE
Romania	642	RO
Russian Federation	643	RU
Rwanda	646	RW
Saint Helena	654	SH
Saint Kitts and Nevis	659	KN
Saint Lucia	662	LC
Saint Pierre and Miquelon	666	PM

Table A -1 (Page 10 of 12)

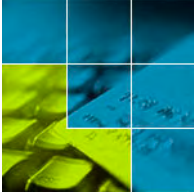
Country	Number	Abbreviation
Saint Vincent and the Grenadines	670	VC
Samoa	882	WS
San Marino	674	SM
Sao Tome and Principe	678	ST
Saudi Arabia	682	SA
Senegal	686	SN
Serbia and Montenegro	891	CS
Seychelles	690	SC
Sierra Leone	694	SL
Singapore	702	SG
Slovakia	703	SK
Slovenia	705	SI
Solomon Islands	090	SB
Somalia	706	SO
South Africa	710	ZA
South Georgia and the South Sandwich Islands	239	GS
Spain	724	ES
Sri Lanka	144	LK
Sudan	736	SD
Suriname	740	SR
Svalbard and Jan Mayen	744	SJ

Table A -1 (Page 11 of 12)

Country	Number	Abbreviation
Swaziland	748	SZ
Sweden	752	SE
Switzerland	756	CH
Syrian Arab Republic	760	SY
Taiwan - Province of China	158	TW
Tajikistan	762	TJ
Tanzania - United Republic of	834	TZ
Thailand	764	TH
Timor-Leste	626	TL
Togo	768	TG
Tokelau	772	TK
Tonga	776	TO
Trinidad and Tobago	780	TT
Tunisia	788	TN
Turkey	792	TR
Turkmenistan	795	TM
Turks and Caicos Islands	796	TC
Tuvalu	798	TV
Uganda	800	UG
Ukraine	804	UA
United Arab Emirates	784	AE
United Kingdom	826	GB

Table A -1 (Page 12 of 12)

Country	Number	Abbreviation
United States Minor Outlying Islands	581	UM
Uruguay	858	UY
Uzbekistan	860	UZ
Vanuatu	548	VU
Venezuela	862	VE
Viet Nam	704	VN
Virgin Islands - British	092	VG
Virgin Islands - U.S.	850	VI
Wallis and Futuna	876	WF
Western Sahara	732	EH
Yemen	887	YE
Zambia	894	ZM
Zimbabwe	716	ZW



Appendix B Digital Receipts

The Digital Receipts component sends e-mail confirmations and alerts for authorized and declined transactions. The text of these e-mail notifications is defined in templates. Several e-mail templates are provided with the ClearCommerce Engine.

Barclaycard requires that specific information about the transaction be included in the Digital Receipt. A Digital Receipt template has been created to accommodate the Barclaycard payment processor.

Digital Receipts for a store are configured in the Store Administrator Tool. For information about enabling digital receipts, refer to the *Store Administrator Guide*.

To create new templates, you must use the API tool. Refer the *ClearCommerce Engine API Reference and Guide* for information about creating new templates.

The following table lists the template type and contents of the new template.

TemplateType	TemplateText
101	National Currency Total: %nationaltotal%

Note: Do not edit the contents of template type 101. The contents of this template type are determined by Barclaycard.

The following table lists the template variables and their corresponding fields in the document hierarchy. You cannot create new variables, and these variables cannot be edited.

Template Variable	Field	Data Type
%nationaltotal%	ConfigDoc.CompList.Comp.ConfigActionList.ConfigAction.ValueList.Value. ExchangeToCurrCode	String

In addition, all of the payment-related Digital Receipt templates (template types 0 - 17) have been updated to accommodate the Barclaycard payment processor where currency must be shown in Euro and the local currency. The %BARCLAYS% template variable has been appended to these templates. If the payment processor is Barclaycard, the contents of template type 101 are added to the Digital Receipt. Otherwise, template type 101 is not used.



Appendix C Currency Codes

The ClearCommerce Engine supports the currencies listed in the following table. Unless otherwise noted, currency code and decimal values are specified by the ISO 4217, 6th edition standard. To maintain compatibility with previous versions of the ClearCommerce Engine, some currency code and decimal values are from the ISO 4217, 5th edition standard.

Payment processors that support multiple-currencies typically support a subset of the currencies listed here. Contact a representative from your payment processor to determine which currencies your processor supports.

Table C -1 (Page 1 of 6)

Country	Currency	Currency Code	Decimals
Albania	Lek	008	2
Algeria	Algerian Dinar	012	2
Argentina	Argentine Peso	032	2
Australia	Australian Dollar	036	2
Austria	Schilling	040	2
Belarus	Belarusian Ruble ¹	112	0
Belgium	Belgian Franc	056	0
Bolivia	Bolivian Boliviano	068	2
Botswana	Pula	072	2

Table C -1 (Page 2 of 6)

Country	Currency	Currency Code	Decimals
Brazil	Brazilian Real	986	2
Bulgaria	Lev ²	975	2
Bulgaria	Lev ³	100	2
Canada	Canadian Dollar	124	2
Chile	Chilean Peso ⁴	152	2
China	Yuan Renminbi	156	2
Colombia	Colombian Peso	170	2
Costa Rica	Costa Rican Colon	188	2
Croatia	Croatia Kuna	191	2
Cyprus	Cyprus Pounds	196	2
Czech Republic	Czech Koruna	203	2
Denmark	Danish Krone	208	2
Djibouti	Djibouti Franc	262	0
Dominican Republic	Dominican Peso	214	2
Egypt	Egyptian Pound	818	2
El Salvador	El Salvador Colon	222	2
Estonia	Estonia Kroon	233	2
Europe	Euro	978	2
Finland	Markka	246	2
France	French Franc	250	2
Germany	Deutsche Mark ¹	280	2

Table C -1 (Page 3 of 6)

Country	Currency	Currency Code	Decimals
Greece	Drachma	300	0
Guatemala	Quetzal	320	2
Honduras	Lempira	340	2
Hong Kong	Hong Kong Dollar	344	2
Hungary	Forint	348	2
Iceland	Iceland Krona	352	2
India	Indian Rupee	356	2
Indonesia	Rupiah	360	2
Iran	Iranian Rial	364	2
Ireland	Irish Pound	372	2
Israel	New Sheqel	376	2
Italy	Italian Lira	380	0
Japan	Yen	392	0
Kenya	Kenyan Shilling	404	2
Latvia	Latvian Lats	428	2
Lebanon	Lebanese Pound	422	2
Lithuania	Lithuanian Litas	440	2
Luxembourg	Luxembourg Franc	442	0
Macau	Pataca	446	2
Macedonia, The Former Yugoslav Republic of	Denar	807	2
Malta	Maltese Lira	470	2

Table C -1 (Page 4 of 6)

Country	Currency	Currency Code	Decimals
Mexico	Mexican Peso	484	2
Morocco	Moroccan Dirham	504	2
Netherlands	Netherlands Guilder	528	2
New Zealand	New Zealand Dollar	554	2
Nicaragua	Cordoba Oro	558	2
Norway	Norwegian Krone	578	2
Panama	Balboa	590	2
Paraguay	Guarani	600	0
Peru	Neuco Sol	604	2
Philippines	Philippine Peso	608	2
Poland	Zloty	985	2
Portugal	Portuguese Escudo	620	0
Qatar	Qatari Riyal	634	2
Romania	Leu ⁵	946	2
Romania	Leu ⁶	642	2
Russian Federation	Russian Ruble ⁷	643	2
Russian Federation	Russian Ruble ⁸	810	2
Saudi Arabia	Saudi Riyal	682	2
Serbia and Montenegro	New Dinar	891	2
Singapore	Singapore Dollar	702	2
Slovakia	Slovak Koruna	703	2

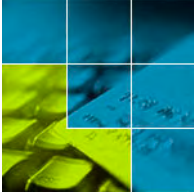
Table C -1 (Page 5 of 6)

Country	Currency	Currency Code	Decimals
Slovenia	Tolar	705	2
Somalia	Somali Shilling	706	2
South Africa	Rand	710	2
South Korea	South Korean Won	410	0
Spain	Spanish Peseta	724	0
Sudan	Sudanese Dinar	736	2
Sweden	Swedish Krona	752	2
Switzerland	Swiss Franc	756	2
Syria	Syrian Pound	760	2
Taiwan	New Taiwan Dollar	901	2
Tanzania	Tanzanian Shilling	834	2
Thailand	Baht	764	2
Turkey	Turkish Lira ⁹	949	2
Turkey	New Turkish Lira ¹⁰	792	2
United Arab Emirates	UAE Dirham	784	2
United Kingdom	Pound Sterling	826	2
Uruguay	Uruguayan Peso	858	2
United States	US Dollar	840	2
Venezuela	Bolivar	862	2
Vietnam	Dong	704	2
Yemen	Yemeni Riyal	886	2

Table C -1 (Page 6 of 6)

Country	Currency	Currency Code	Decimals
Zimbabwe	Zimbabwe Dollar	716	2

1. The Belarusian Ruble and German Deutsche Mark currency codes are from the ISO 4217, 5th edition standard.
2. This is the new Bulgarian Lev with the currency symbol BGN, number 975.
3. The ClearCommerce Engine will also continue to support the “old” Bulgarian Lev with the currency symbol BGL, number 100.
4. The Chilean Peso and Turkish Lira decimal values are from the ISO 4217, 5th edition standard.
5. The new Romanian Leu (currency symbol RON, number 946) goes into effect on July 1, 2005.
6. The ClearCommerce Engine will also continue to support the “old” Romanian Leu with the currency symbol ROL, number 642.
7. The new Russian Ruble (currency symbol RUB, number 643) goes into effect on Jan. 1, 1998.
8. The ClearCommerce Engine will continue to support the “old” Russian Ruble with the currency symbol RUR, number 810.
9. The New Turkish Lira (currency symbol TRY, number 949) goes into effect on Jan. 1, 2005.
10. The ClearCommerce Engine will continue to support the “old” Turkish Lira with the currency symbol TRL, number 792.



Glossary

access control level

A set of privileges that defines the access available to specific data and processes on the Engine. Access control levels are arranged hierarchically and are represented by units called *entities*.

See also *entity*, *SysAdmin entity*, *CSP entity*, *Merchant entity*, and *Store entity*.

account administrator

The person responsible for administering merchant account activities, including setting up merchants and managing user IDs and permissions. Frequently, a commerce service provider acts as an account administrator.

See also *commerce service provider (CSP)*.

Account Administrator (CSP) Tool

A graphical user interface that enables CSP users who have the appropriate permissions to create and manage other CSP users, to create Merchant entities and manage their configuration, and to create Store entities on the Engine. The tool also enables CSP users to view reports about Store activities and manage bulk settlement to specific processors.

See also *CSP user*, *Merchant entity*, *Store entity*, and *bulk settlement*.

acquiring bank

See *merchant bank*.

acquiring processor

See *payment processor*.

Address Verification Service (AVS)

A service used to verify that the billing street address and ZIP code supplied by the customer (on the merchant's Web site) match the data on record at the card-issuing bank. AVS is supported by most U.S.-based payment processors. AVS is not supported outside of the U.S. Benefits of using AVS include enhanced fraud protection, which, in turn, can protect the merchant's discount rate.

API

See *application programming interface*.

application programming interface (API)

A set of routines or definitions that are part of an operating system or application program. An API is used by programmers when they write an application so that the application can make requests to the operating system or another application program.

Auth

A transaction type in which a transaction is preauthorized and postauthorized in one step. In the U.S., Auth is typically used to process purchases of goods or services that do not require a physical shipment. For example, in the U.S., Auth would be used for memberships or subscriptions that are purchased electronically and used immediately.

Contrast this term with *PreAuth* and with *PostAuth*, which are transaction types used for purchases of *hard goods* (which must be shipped).

A payment processor might refer to this transaction type as *preauthorization/postauthorization*.

authorization

A request to the payment processor (who then makes a request to the card-issuing bank) to approve the reservation of funds in a customer's account. The request can involve several transaction types, including *Auth*, *PreAuth*, *PostAuth*, *ReAuth*, and *RePreAuth*.

authorization reversal

See *partial reversal*.

authorize only

See *PreAuth*.

authorizer

The card-issuing bank or its assigned representative that approves or declines transactions during authorization.

See also *card-issuing bank* and *authorization*.

AVS

See *Address Verification Service*.

Bank Identification Number (BIN)

A number, defined by the American Bankers Association, that identifies the *card-issuing bank*. The BIN is typically the first six numbers of a Visa or MasterCard credit card account number.

batch

A group of transactions waiting for settlement. See also *settlement* and *Settle*.

batch ID

A unique numeric identifier assigned to a batch by the payment processor. (Not all payment processors assign their own batch IDs.)

See also *settlement ID*.

BIN

See *Bank Identification Number*.

bulk settlement

A type of settlement in which all transactions that have a status of Bulk Ready, that are configured to be sent to the same processor, and that are associated with the same SysAdmin or CSP entity are sent to the processor together.

Contrast with *single-store settlement*. See also *settlement*.

cancel

See *Void*.

card association

A fee-based, membership-driven group of financial institutions that uses common processing and administrative facilities according to common operating rules. Examples are Visa and MasterCard credit cards.

See also *card organization*.

cardholder

An individual to whom a card is issued, or who is authorized to use an issued card.

Card Identifier (CID)

One of several types of Card Verification Methods; a 3- or 4-digit code, typically printed on the card. The CID is submitted as part of an authorization request.

See also *Card Verification Method (CVM)* and *Card Verification Value 2 (CVV2)*.

card-issuing bank

The financial institution that issues credit cards to individuals and businesses.

Also known as *credit-card issuing bank*.

card-not-present

Pertaining to a credit card transaction that does not require the cardholder to be physically present. All Internet transactions are card-not-present transactions.

card organization

A fee-based processing institution that uses proprietary processing and administrative systems to facilitate card processing for its merchants and cardholders. American Express and Discover are examples of card organizations.

card-present

Pertaining to a credit card transaction in which the cardholder and the card are physically present. Typically, the credit card passes through a card reader and the cardholder signs a receipt.

Contrast with *card-not-present*.

Card Verification Method (CVM)

Any of several methods used to ensure that a credit card being used in a purchase is in the possession of its owner. Examples of CVMs are *Card Verification Value 2 (CVV2)* and *Card Identifier (CID)*. See these terms for more information.

Card Verification Value 2 (CVV2)

One of several types of Card Verification Methods; a 3- or 4-digit code, typically printed in the signature panel on the back of the card. The CVV2 is submitted as part of an authorization request.

See also *Card Verification Method (CVM)* and *Card Identifier (CID)*.

chargeback

The reversal of a previously Settled transaction in which the merchant bank debits the amount of the sale from the merchant's account because the cardholder has disputed the charge.

Chargeback

A transaction type used to record in the database that the merchant bank has reversed a previously settled transaction through a *chargeback*.

check card

See *offline debit card*.

ClearCommerce Engine

The system software upon which ClearCommerce PaymentDirector and ClearCommerce FraudShield are built.

client ID

A unique number used to identify each individual entity on the Engine. The client ID is assigned to an entity at the time the entity is created.

See also *entity*.

clustering

Linking together multiple ClearCommerce Engines (referred to as *instances*) running on separate physical machines. Each Engine in the cluster can perform the same or different functions as other Engines in the cluster.

commerce service provider (CSP)

A company that provides businesses with the hosting services, the transaction processing capability, and the software that the businesses need to sell products over the Internet.

commercial card

A card, much like a credit card, that is issued to businesses so that agents or employees of that business can purchase goods and services.

Some businesses prefer commercial cards because the data that is associated with commercial card transactions is provided in greater detail. This detail typically makes account tracking easier.

See *Level I data*, *Level II data*, and *Level III data*.

ConfigDoc

A document that contains data for requesting a configuration task.

See also *EngineDoc*, *OrderFormDoc*, and *ReportDoc*.

CPS

See *Custom Payment Service*.

credit card processor

See *payment processor*.

Credit (independent)

A transaction type that transfers funds *to* the cardholder's account, rather than *from* the account. An independent Credit does not relate the credit to a previously existing order.

A payment processor might refer to this transaction type as *refund* or *rebate*.

Credit (on existing order)

A transaction type that transfers funds *to* the cardholder's account, rather than *from* the account. This transaction type is typically used to refund a customer's money for an order that was previously settled.

A payment processor might refer to this transaction type as *return*, *refund*, or *rebate*.

CSP

See *commerce service provider*.

CSP entity

A unit that represents the CSP access control level on the Engine. Multiple CSP entities can exist under a single SysAdmin entity. A CSP entity is the parent of Merchant entities and the antecedent of Store entities.

CSP user

A user associated with a CSP entity.

See also *CSP entity*.

customer

In e-commerce, a person who makes a purchase at an online store.

Custom Payment Service (CPS)

Part of a Visa program that gives merchants a lower interchange rate. CPS assigns unique numbers to track transactions between authorization and settlement, and to monitor the transactions. The unique CPS number is required to perform a *partial reversal* transaction for a Visa card.

Also known as *Interchange Compliance Program (ICP)* for MasterCard credit cards.

detail capture

See *settlement*.

digital certificate

A software file used to authenticate the identities of parties who are transmitting data to each other. A digital certificate is issued by a trusted Certificate Authority (CA).

digital receipt

An electronic acknowledgement of an order placed from a commerce-enabled Web site.

Director

The core of the Engine. The Director manages documents routed through the Engine, components loaded, runtime requirements, and user authentication.

discount fee (or rate)

The fee a merchant pays to a merchant bank for acquiring the merchant's transactions. The fee is usually a small percentage of each purchase amount and of each settlement deposit.

See also *interchange fee (or rate)*.

document

A container that holds data.

draft capture

See *settlement*.

e-commerce

The practice of buying and selling products over the Internet.

Also known as *electronic commerce*.

encryption

A method used to prevent unauthorized parties from reading data that is transmitted over a network or stored in a database.

EngineDoc

A container for Engine documents. An EngineDoc must contain a ConfigDoc, an OrderFormDoc, or a ReportDoc.

See also *ConfigDoc*, *OrderFormDoc*, and *ReportDoc*.

entity

A level of data access on the ClearCommerce Engine. Entities are organized as a hierarchy, with the SysAdmin entity at the top and the Store entity at the bottom. Any entity can act as a parent to child entities below it. The four entity levels are SysAdmin, CSP, Merchant, and Store.

See also *SysAdmin entity*, *CSP entity*, *Merchant entity*, and *Store entity*.

field

An attribute that contains a specific type of value, such as string, integer, currency, or timestamp. Fields are assigned at the record level or document level. Fields cannot contain other fields.

See also *record* and *document*.

ForceInsertAuth

A transaction type in which an approved *Auth* transaction is inserted into the database. It can be used for transactions that have been approved using a method other than the Engine, such as transactions approved by phone.

ForceInsertPreAuth

A transaction type in which an approved *PreAuth* transaction is inserted into the database. It can be used for transactions that are approved using a method other than the Engine, such as transactions approved by phone.

ForceUpdateAuth

A transaction type that forcibly approves an *Auth* transaction and updates its authorization code.

ForceUpdatePreAuth

A transaction type that forcibly approves a *PreAuth* transaction and updates its authorization code.

frame relay

A communication protocol that can be used between the ClearCommerce Engine and a payment processor.

hard good

A purchasable item that must be shipped and delivered and cannot be electronically downloaded.

hierarchy

A ranked series of access control levels and entities on the Engine.

See also *access control level* and *entity*.

ICP

See *Interchange Compliance Program*.

installments

A type of periodic billing in which the merchant charges the customer's account on a periodic basis until the total amount of the purchase has been paid. See also *periodic billing*. Contrast with *recurring*.

instance

An installation of a ClearCommerce Engine.

instance ID

A unique number used to identify an installation of the Engine.

integrator

A person who is responsible for integrating a *storefront* with the ClearCommerce Engine.

Interchange Compliance Program (ICP)

Part of a MasterCard program that gives merchants a lower interchange rate. ICP assigns unique numbers to track transactions between authorization and settlement, and to monitor the transactions.

Also known as *Custom Payment Service (CPS)* for Visa credit cards.

interchange fee (or rate)

A fee paid by the merchant bank to the issuing bank to compensate for postsettlement financial services.

See also *discount fee (or rate)*.

interleaved

Pertaining to a communication method between the ClearCommerce Engine and a payment processor in which multiple requests and responses can be sent and received simultaneously over a single connection.

Internet service provider (ISP)

A company that provides Internet access to individuals or businesses.

IP address

A unique address of a device using the TCP/IP protocol stack. No two devices have the same IP address.

IP addresses are expressed in dot notation, such as 127.0.0.1. All IP addresses have the same format, and each number in the address must be between 0 and 255.

ISP

See *Internet service provider*.

leased line

A telephone line that is leased from a telecommunications carrier for the purpose of communicating transactions between the ClearCommerce Engine and the payment processor. Leased line communication is ideally suited for heavy transaction volumes.

Level I data

The minimum data required to electronically process credit card transactions. This data includes card account number, expiration date, transaction amount, and basic information about the merchant. Level I data is supported by any payment processor that accepts credit cards. Credit cards are authorized and associated with normal transaction data through settlement.

Level II data

Data that is associated with Level II commercial card transactions. In addition to Level I data, Level II data includes a purchase order (PO) number and sales tax amount. Level II data is required by the payment processor at the time of settlement.

Level III data

Data that is associated with Level III commercial card transactions. In addition to Level I and Level II data, Level III data includes summary and line-item information such as product codes, descriptions, duty amounts, quantities, and ship-to postal data.

line item

In an order-related transaction, a unique purchased item. For example, if a customer purchases six apples, four bananas, and two cherries, then apples, bananas, and cherries are three separate *line items*.

mail order/telephone order (MO/TO)

A type of transaction in which a cardholder orders goods or services from a merchant and neither the credit card nor the cardholder is physically present at the time or place of the order. For example, an MO/TO might take place by telephone, through the mail, or on the World Wide Web.

merchant

A person or company that owns one or more stores.

merchant bank

A financial institution that does business with merchants, enabling them to accept credit cards. Examples of merchant banks are Chase Merchant Services, Paymentech, and BankOne.

Also called *acquiring bank*.

Merchant entity

A unit that represents the Merchant access control level on the Engine. Multiple Merchant entities can exist for each CSP entity on the Engine. The Merchant entity can be the parent of one or more Store entities.

merchant ID (MID) number

A number issued to a merchant by a merchant bank. The merchant bank uses the MID to identify a specific merchant in credit card transactions.

Different MIDs are required for each type of business that an individual merchant performs. For example, a different MID is required for *MO/TO* (*card-not-present*) transactions because the merchant banks charge different discount fees for MO/TO and *card-present* transactions.

See also *terminal ID (TID) number*.

Merchant user

A user associated with a Merchant entity.

See also *Merchant entity*.

MID

See *merchant ID number*.

MO/TO

See *mail order/telephone order*.

multithreaded

Pertaining to the ability to process multiple transactions in parallel on one server.

Network Interface Protocol (NIP)

A protocol used by computers to communicate over a leased line.

nexus

In an e-commerce context, a connection or link to a state (such as Texas or Florida), which could result in a requirement to collect state sales tax.

NIP

See *Network Interface Protocol*.

offline debit card

A type of debit card that does not require the cardholder to be physically present at the time of the purchase. Sometimes called a check card, offline debit cards can be used for Internet transactions. (Offline debit cards are processed in the same way as credit cards.)

Contrast with *online debit card*.

OLTP

See *online transaction processing*.

online debit card

A type of debit card that requires the cardholder to be physically present at the time of the transaction. Typically, the cardholder must enter a Personal Identification Number (PIN), and the card must be passed through a card reader. One example of an online debit card is an Automatic Teller Machine (ATM) card.

Because online debit cards require the cardholder to be present at the time of the transaction, these cards cannot be used for Internet transactions.

Contrast with *offline debit card*.

online transaction processing (OLTP)

The act of sending and receiving data to complete preauthorization, postauthorization, and settlement of a transaction.

Through the use of the ClearCommerce Engine, online transaction processing includes fraud checking, transmission of the data to a payment processor, receipt of approval or rejection of the transaction from the processor, capture (or postauthorization) of the transaction, and settlement.

open-to-buy

Pertaining to the portion of a cardholder's available credit that can be used immediately for purchases. An authorization transaction decreases the cardholder's open-to-buy balance, in effect reserving funds for the eventual settlement.

OrderFormDoc

A document that contains data for performing a payment transaction.

See also *ConfigDoc*, *EngineDoc*, and *ReportDoc*.

order ID

A unique numeric identifier assigned to an order by either the storefront or the Engine.

See also *transaction ID*.

partial reversal

A process that releases the unused balance of a customer's open-to-buy balance. A PostAuth transaction can cause a partial reversal if the following conditions exist: (1) the store has shipped only part of an order and the amount of this PostAuth is less than the amount of the approved PreAuth for the order; (2) the order was paid for with a Visa card; and (3) partial reversals are supported by the payment processor to which the transaction is submitted.

Also known as *authorization reversal*.

partial shipment

A process in which a store ships only some of the goods in a single order and, therefore, submits a PostAuth for less than the amount of the approved PreAuth for the order. Sometimes a partial shipment initiates a *partial reversal*.

See *partial reversal* for more information.

payment processor

The financial institution that is typically responsible for routing and handling authorization and settlement. The ClearCommerce Engine uses payment solution software to communicate with the payment processor.

Also known as *card processor* or *processor*.

periodic billing

Billing a customer on a regular interval over a period of time. See also *installments* and *recurring*. Compare with *reference transaction*.

point of sale

Physical or virtual location where a transaction is initiated by the merchant.

POS characteristics

Characteristics of the input environment expressed as values that become part of the transaction request packet that is sent to a payment processor.

PostAuth

A transaction type that prepares an approved *PreAuth* transaction for settlement. In the U.S., this transaction type typically occurs only after the purchased goods have been shipped.

A PostAuth is preceded by a *PreAuth*.

A payment processor might refer to this transaction type as *ticket only* or *capture*.

PreAuth

A transaction type in which a cardholder's account is verified to be in good standing and *Address Verification Service* is performed (if supported). If the verifications are approved by the authorizer, the total amount of the order is reserved against the cardholder's open-to-buy balance. The cardholder's available credit is not changed, however.

In the U.S., PreAuth is used as the first stage of processing purchases of goods that must be physically shipped to the customer. An approved PreAuth is followed by *PostAuth*.

Contrast this term with *Auth*.

A payment processor might refer to this transaction type as *authorization* or *authorize only*.

PrePurchase

A transaction type (internal to the Engine) in which a transaction is created so that tax amounts or shipping charges can be calculated.

processor

See *payment processor*.

commercial card

A card, much like a credit card, that is issued to businesses so that agents or employees of that business can purchase goods and services.

Some businesses prefer commercial cards because the data that is associated with commercial card transactions is provided in greater detail. This detail typically makes account tracking easier.

See *Level I data*, *Level II data*, and *Level III data*.

ReAuth

A transaction type in which an *Auth* or a *PostAuth* transaction is resubmitted for processing.

rebate

See *Credit (on existing order)* and *Credit (independent)*.

record

An intermediate container that organizes information into discrete units within a *document*. Records can contain *fields* and other records.

See also *document* and *field*.

recurring

A type of periodic billing in which the merchant charges the customer's account on a periodic basis for a specified period or until the order is cancelled. See also *periodic billing*. Contrast with *installments*.

refund

See *Credit (on existing order)* and *Credit (independent)*.

ReportDoc

A document that queries the ClearCommerce Engine database tables and returns information in a report format.

See also *ConfigDoc*, *EngineDoc*, and *OrderFormDoc*.

RePreAuth

A transaction type in which a *PreAuth* transaction is resubmitted for processing.

RequestForResponse

A transaction type, specific to either the Paymentech Salem or NPC Mainframe. (1) When used for the Paymentech Salem processor, a transaction type in which an account administrator requests that the processor re-transmit a settlement response. (2) When used for the NPC Mainframe processor, a transaction type in which a system administrator requests the NPC Confirmation file.

respawn

To automatically restart a process that has stopped.

return

See *Credit (on existing order)*.

reversal

See *Void*.

ReviewPendingUpdate

A transaction type that updates the status of a potentially fraudulent transaction following the review.

Secure Sockets Layer (SSL)

An industry-standard security protocol that provides secure transmission of private information sent over the Internet. The protocol provides data encryption, server authentication, message integrity, and client authentication for TCP/IP connections.

secure Web server

A Web server that is physically and logically secured. A secure Web server supports security protocols, such as SSL, that request authentication when the server is accessed and that encrypt the data that is stored on it or sent to and from it.

Settle

A transaction type that begins the transfer of funds to the merchant's account (in the case of a sale) or from the merchant's account (in the case of a credit).

settlement

A process in which money is transferred between a merchant and a cardholder. For a sale, money is transferred from a cardholder's account to a merchant's account. For a credit, money is transferred from a merchant's account to a cardholder's account.

See also *bulk settlement* and *single-store settlement*.

settlement ID

A unique numeric identifier assigned to a batch by the Engine.

See also *batch* and *batch ID*.

shopping cart

In a storefront, a mechanism that tracks the items a customer has selected to purchase and enables the customer to view and modify the order before completing the purchase.

single-store settlement

A type of settlement in which a Settle transaction is created and the batch is immediately sent to the processor.

Contrast with *bulk settlement*. See also *settlement*.

soft good

A purchasable item that is ordered, paid for, and delivered electronically.

split routing

The ability to process transactions at different payment processors based on card type. For example, split routing enables the ClearCommerce Engine to process a storefront's Visa transactions to one processor and all other card transactions to a different processor.

SSL

See *Secure Sockets Layer*.

store

An online business establishment that offers goods and services for sale through online ordering. Sometimes called *online store*.

store administrator

A person responsible for managing an online store's e-commerce activity.

Store Administrator Tool

A graphical user interface that enables store administrators who have the appropriate permissions to manage configuration of Store entities, view reports of Store activities, manage fraud, initiate point of sale transactions, and manage settlement on the Engine.

See also *store administrator* and *Store entity*.

Store entity

A unit that represents the Store access control level on the Engine. The Store entity is the lowest access level.

storefront

A Web site designed to handle electronic transactions over the Internet.

Store user

A user associated with a Store entity.

See also *Store entity*.

SysAdmin entity

The top data access level in the ClearCommerce Engine hierarchy. The SysAdmin entity is the parent of CSP entities and the antecedent of Merchant entities and Store entities.

SysAdmin user

A user associated with a SysAdmin entity.

See also *SysAdmin entity*.

system administrator

A person who is responsible for administering Engine-level activities, including ensuring successful communication with payment processors and monitoring server performance.

System Administrator Tool

A graphical user interface that enables SysAdmin users who have the appropriate permissions to create and manage other SysAdmin users, to create CSP entities, to configure Engine settings, and to manage bulk settlement to specific processors.

See also *SysAdmin user* and *CSP entity*.

terminal ID (TID) number

A number assigned by a payment processor to identify a specific point-of-sale terminal.

In a retail store, one TID is typically assigned to each device used to authorize credit card transactions. For Internet transactions, one TID is typically assigned to each merchant Web site or business unit.

See also *merchant ID (MID) number*.

third-party transaction processor

An entity that acts on behalf of a card-issuing bank, merchant bank, or payment processor during transaction processing.

See also *card-issuing bank*, *merchant bank*, and *payment processor*.

ticket only

See *PostAuth*.

TID

See *terminal ID number*.

transaction

Any action between a cardholder and a merchant that results in activity on either account. One example of transaction is the process that takes place when a cardholder makes a purchase with a credit card. Another is the process when a merchant credits all or part of an order back to a customer.

transaction ID

A unique numeric identifier assigned to a transaction by the Engine.

See also *order ID*.

transaction processing

See *online transaction processing*.

Transmission Control Protocol/Internet Protocol (TCP/IP)

A protocol for communication between computers, used as a standard for transmitting data over networks and as the basis for standard Internet protocols.

UnlockSettlement

A transaction type that unlocks a previously locked settlement.

user

A person who is assigned specific permissions that are associated with an entity on the Engine.

See also *entity*.

Value Added Tax (VAT)

A sales tax collected in many parts of the world, for example, in Canada, Australia, and Europe, which is ultimately paid by the customer. The tax is levied on each production and distribution stage as the product or service changes ownership. The tax is calculated based on the difference of the output (current sales tax rate) and additive input (tax charged by previous owners of the good, which can be recovered or offset) values.

VAT

See *Value Added Tax*.

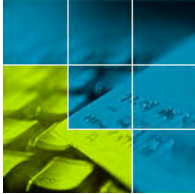
VGIS

Visa Global XML Invoice Specification. Introduced in 2000, VGIS is aimed at commercial card users who seek to exchange business-to-business invoice and payment data. The ClearCommerce Engine supports VGIS, however, in order to implement VGIS, your payment processor must also support it.

Void

A transaction type that cancels a transaction that has not yet settled.

A payment processor might refer to this transaction type as *reversal* or *cancel*.



Index

A

- Account Number 32
- address 12
- Address Verification Service (AVS) 12
 - implementation of 12
 - input fields 41
 - responses 56
- Alternate Tax Id 30
- API
 - component configuration 73
- Approved 36, 62
- Auth transaction 14
- AuthCode 53
- authorization
 - input 38
 - input fields
 - AVS 41
 - CVM 41
 - process flow 37
- authorization, alternate name for PreAuth 14
- authorization/capture, alternate name for Auth 14
- authorize only, alternate name for PreAuth 14
- automatic settlement 59
- AVS 12
- AvsDisplay 53
- AvsRespCode 53

B

- batch 59
- batch reports 61

- batch, alternate name for Settle 20
- billing address 12
- Bulk Ready 13
- BuyerCode 42

C

- cancel, alternate name for Void 17
- capture, alternate name for PostAuth 16
- Card Validation Code (CVC) 12
- Card Verification Method (CVM)
 - fields 41
 - implementation of 12
- CardholderPresentCode
 - description of 49
- CardProcRespTime 53
- cards supported 6
- CcErrCode 53
- CcReturnMsg 53
- clustering 6
- Commercial Card Option 29
- communication methods 5, 7
- ConfigDocs 78
- configuration
 - component (API) 73
 - component (UI) 24
 - processor (Store) 31
- Country 43
- Credit transaction 15, 17
- Credits 59
- currencies
 - support for 8
 - supported 6
- Currency 29

CVC 12
CVM Responses 57
Cvv2Resp 54

D

data capture 6
 Level I 10
 Level II 10
 Level III 10
Declined 36, 61, 62
detail, alternate name for Settle 20
draft capture, alternate name for Settle 20

E

Engine log 61
Exchange Rate 32
Exchange To Currency Code 32

F

ForceInsertAuth transaction 15
ForceInsertPreAuth transaction 15
ForceUpdateAuth transaction 19
ForceUpdatePreAuth transaction 19
FTP Password 28
FTP User Name 28
full reversal, alternate name for Void 17

G

glossary 101
GrossNetIndicator 44

I

ICA Number 30
Industry Standard Code 30

K

key/value pairs 24

L

Level
 I 10
 II 10
 III 10
Locale 30
log file 58

M

manual settlement 59
MaxResponseWaitTime 24
Merchant Category Code 29
Merchant ID 31
MerchTaxIdCountry 29
Mode 61
multithreading 5, 8

N

NumConnections 24, 26
NumSettleThreads 26

O

Order reports 58

P

Partial Ship Follow-up 29
payer authentication 9
PayerAuthenticationResultCode 54
PayerSecurityLevel 46
payment
 component configuration 24
 simulator components 36, 66
payment routing 31
periodic billing 6
Point of Sale (POS) fields 48
POS characteristics 49
POS ID 28
postal code 12
PostalCode 42
PostAuth transaction 16
postauthorization, alternate name for
 PostAuth 16
PreAuth transaction 14
preauthorization /postauthorization,
 alternate name for PostAuth 14
preauthorization, alternate name for
 PreAuth 14
PrimaryHost 24, 26
PrimaryHostPort 25, 26
processing services 1
processor configuration (Store) 31
ProcReturnCode 53

ProcReturnMsg 53
Production 40, 61

R

Random 36, 40
ReAuth transaction 18
rebate, alternate name for Credit 15, 17
refund, alternate name for Credit 15, 17
reports

- batch 61
- order 58

RePreAuth transaction 18
responses

- AVS 56
- CVM 57
- settlement 61

return, alternate name for Credit 17
reversal, alternate name for Void 17

S

sale, alternate name for PostAuth 14
Sales 59
SecondaryHost 25, 26
SecondaryHostPort 25, 27
SecurityIndicator

- description of 49
- values 51

Settle transaction 20
settlement

- input 61
- process 60
- responses 61
- scheduler configuration (Store) 33
- type 13

Settlement ID 62
Settlement Summary 62
settlement, alternate name for Settle 20
simulator

- components 36, 66

Sorting Code 32
specifications compliance 5
standards compliance 5
Status 62
System Administrator Guide 61

T

Tax Id 29
Terminal ID 32
TerminalInput

- values 52

TerminalInputCapability

- description of 49

Test 40, 61
test components 35
ticket only, alternate name for PostAuth 16
Total 53
Transaction 7
Transaction ID 53
transaction type

- Auth 14
- Credit 15, 17
- ForceInsertAuth 15
- ForceInsertPreAuth 15
- ForceUpdateAuth 19
- ForceUpdatePreAuth 19
- PostAuth 16
- PreAuth 14
- ReAuth 18
- RePreAuth 18
- Settle 20
- Void 17

Transaction Type Support 13

U

UnlockSettlement 21

V

VGIS 11, 65
Visa Global Invoice Specification 11
Visa Payer Authentication Service 9
voice authorization 15, 19
Void transaction 17
Volume Serial Prefix 28
VPAS 9