Dynamic Currency Conversion

For First Data
Using the SCMP API

April 2018

CyberSource®

the power of payment

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Recent Revisions to This Document

Release	Changes
April 2018	This revision contains only editorial changes and no technical updates.
March 2018	Initial release.

About This Guide

Audience and Purpose

This guide is written for application developers who want to use the CyberSource SCMP API to integrate dynamic currency conversion (DCC) for First Data into an order management system.

Implementing the CyberSource DCC services requires software development skills. You must write code that uses the API request and reply fields to integrate the DCC services into an existing order management system.

Conventions

The following special statements are used in this document:

Note

A *Note* contains helpful suggestions or references to material not contained in this document.

Important

An *Important* statement contains information essential to successfully completing a task or learning a concept.

The following text conventions are used in this document:

Table 1   Text Conventions

Convention	Meaning
boldface	Boldface type indicates API field names, API service names, and graphical user interface elements that you must act upon.
`monospace`	Monospace type indicates code in examples or possible values for API fields.

Related Documentation

- *Getting Started with CyberSource Advanced for the SCMP API* (PDF | HTML)

- *Credit Card Services Using the SCMP API* (PDF | HTML) describes how to integrate CyberSource payment processing services into your business.

- The *Classic Reporting Developer Guide* (PDF | HTML) describes how to download reports.

Refer to the Support Center for complete CyberSource technical documentation:

http://www.cybersource.com/support_center/support_documentation

Customer Support

For support information about any CyberSource service, visit the Support Center:

http://www.cybersource.com/support

Working with DCC

The CyberSource DCC solution described in this document works with the CyberSource credit card services, which are described in *Credit Card Services Using the SCMP API*. This DCC solution is supported on the following processors and card types:

- FDC Nashville Global—Visa and Mastercard

- FDMS South—Visa and Mastercard

The DCC service converts a foreign cardholder's purchase from your local currency to the cardholder's billing currency. This service can help you improve or create business relationships with customers who prefer to make purchases in their own currency.

Requirements

The requirements for using the DCC service are:

- Your local currency must be USD.

- You must contact CyberSource Customer Support to have your account configured for this feature.

- You must provide the customer with a receipt showing the USD amount, the foreign currency amount, and the rate of exchange used to convert the order amount. You must also have the customer sign an acknowledgement that the customer had a choice to pay in USD and that the choice of currency is final.

Limitations

When requesting the DCC service, do not request any of these CyberSource services in the same request message:

- Tax calculation
- Authorization
- Capture
- Credit

Do not use Level II or Level III processing with DCC.

Do not enable partial authorizations for orders that use DCC.

⚠️ **Important**	For DCC transactions, USD is the only supported currency for full authorization reversals. You can reverse an authorization if the DCC indicator is 2 or 3 because these values indicate that the transaction was in USD. If you request a full authorization reversal when the DCC indicator is 1, which indicates that the transaction was in a foreign currency, the reversed amount will be incorrect.

Terminology

Table 2   DCC Terminology

Term	Definition
Billing currency	Cardholder's currency in which their card is denominated and in which transactions are posted to the cardholder's account.
Converted amount	Amount of the transaction, denominated in the cardholder's billing currency.
DCC markup	Commission added to the transaction price at the time of the currency conversion.
DCC service	Service that enables you to offer foreign customers an active choice to pay in the billing currency associated with their card. This service is supported only for Visa and MasterCard.
Exchange rate	Conversion factor used to convert an amount in one currency to an equivalent amount in another currency.
Local currency	Your selling currency that you use for pricing your goods and in which you usually submit transactions for processing.
Margin rate percentage	DCC markup.
Original amount	Amount of the transaction denominated in your local currency.

Relaxed Requirements for Address Data and Expiration Date

To enable relaxed requirements for address data and expiration date, contact CyberSource Customer Support to have your account configured for this feature. For details about relaxed requirements for address data and expiration date, see Relaxed Requirements for Address Data and Expiration Date page.

Using DCC for an Order

This section guides you through the process of calling the DCC service for a credit card transaction.

> **Note** For information about the CyberSource SCMP API, see *Getting Started with CyberSource Advanced for the SCMP API*.

Step 1   Request the DCC service.

a   Include the statement `ics_applications=ics_dcc` in your request.

b   Include the required DCC fields in your request:
- amount: original amount
- currency: local currency
- customer_cc_number: first 6 to 10 digits of the credit card number
- merchant_id
- merchant_ref_number

For details about these fields, see "Request-Level Fields for the DCC Service," page 14 and "Offer-Level Fields for the DCC Service," page 15.

c   Receive the DCC reply fields:
- dcc_dcc_supported: flag that indicates whether DCC is supported for this order.
- dcc_exchange_rate: exchange rate
- dcc_exchange_rate_timestamp: exchange rate timestamp
- dcc_foreign_amount: converted amount
- dcc_foreign_currency: converted currency code
- dcc_margin_rate_percentage: DCC markup

For details about these fields, see "Reply Fields for the DCC Service," page 16.

Step 2   If necessary, process the order without DCC.

If the purchase is not eligible for DCC, or DCC processing is not available, proceed with the order in your local currency. In your transaction requests (authorization, capture, credit), include the DCC indicator set to 2, which indicates that the order amount could not be converted.

> **Note** If you are using your local currency for the order, do not perform the rest of this DCC procedure.

Step 3   Query the customer.

If the purchase is eligible for DCC, you must get permission from the customer before you can proceed:

a   Explain to your customer that the order is a candidate for DCC.

b   Display the required DCC information to the customer. Contact your acquirer for these requirements.

c   Ask your customer if they would like to complete the order in their billing currency.

d   After your customer chooses a currency for the order, display a message about the DCC agreement in accordance with the payment card company rules. A typical message is, "I acknowledge that I was offered a choice of currencies in which to perform this transaction, and I understand that this choice is final."

> ⚠️ **Important**   Before you can use DCC for a purchase, the cardholder must explicitly choose to have the purchases subjected to DCC. Because of this requirement, you cannot use DCC for recurring payments or a recurring subscription.

Step 4   If necessary, proceed in the local currency.

If the customer does not choose DCC, proceed with the order in your local currency:

- In your transaction requests (authorization, capture, credit), include the DCC indicator set to 3, which indicates that the cardholder declined the currency conversion.
- Continue with this procedure.

Step 5   Authorize the payment.

For information about creating an authorization request, see *Credit Card Services Using the SCMP API*.

The following table lists the DCC fields required for the authorization, capture, and credit services. These request field names are not exactly the same as the names of the DCC service reply fields. For details about these fields, see "DCC Request-Level Fields for Credit Card Services," page 18.

Table 3   DCC Fields Required for the CyberSource Authorization, Capture, and Credit Services

Request Field Name for Authorization, Capture, and Credit Services	Reply Field Name for the DCC Service	Value
dcc_indicator	No corresponding field.	DCC indicator: If the customer chose DCC, set the indicator to 1. If the customer did not choose DCC, set the indicator to 3.
exchange_rate	dcc_exchange_rate	Exchange rate.
exchange_rate_timestamp	dcc_exchange_rate_timestamp	Exchange rate timestamp.
foreign_amount	dcc_foreign_amount	Converted amount.
foreign_currency	dcc_foreign_currency	Converted currency code.

Step 6   Display DCC information.

If the customer chose DCC, notify your customer that the transaction was successfully authorized, and display required DCC information to the customer.

Step 7   Capture the authorization.

For information about creating a capture request, see *Credit Card Services Using the SCMP API.*

If DCC data was included in the authorization request, it must also be included in the capture request:

- If the capture amount is the same as the authorization amount, submit a capture request that includes the same DCC values that were included in the authorization request.
- If the capture amount is different from the authorization amount, call the DCC service with the capture amount, and then submit a capture request that includes the new DCC values.

Step 8   Optional: credit the payment.

For information about creating a credit request, see *Credit Card Services Using the SCMP API.*

If DCC data was included in the capture request, it must also be included in the credit request:

- For a follow-on credit with a credit amount that is the same as the capture amount, submit a credit request that includes the same DCC values that were included in the capture request.

■ For a follow-on credit with a credit amount that is different from the capture amount, call the DCC service with the credit amount, and then submit a credit request that includes the new DCC values.

■ For a stand-alone credit, call the DCC service with the credit amount, and then submit a credit request that includes the new DCC values.

Note	If the customer did not choose DCC, use the DCC values that you already obtained.

Step 9 View the transaction results.

If the customer chose DCC, the following DCC values are included in the transaction results that are displayed on the Business Center:

■ Original amount

■ Converted amount

■ Exchange rate

The DCC values are also included in the XML version of the Payment Submission Detail Report. For a description of this report, see the *Classic Reporting Developer Guide*.

! **Important**	You must subscribe to the Payment Submission Detail Report in order to have access to it.

API Fields

Formatting Restrictions

Unless otherwise noted, all fields are order and case insensitive and the fields accept special characters such as @, #, and %.

Note	Values for request-level and offer-level fields must not contain carets (^) or colons (:). However, they can contain embedded spaces and any other printable characters. When you use more than one consecutive space, CyberSource removes the extra spaces.

Data Type Definitions

Table 4   Data Type Definitions

Data Type	Description
Date and time	Format is YYYY-MM-DDThhmmssZ, where: ■ T separates the date and the time ■ Z indicates Coordinated Universal Time (UTC), also known as Greenwich Mean Time (GMT) **Example** 2016-08-11T224757Z equals August 11, 2016, at 22:47:57 (10:47:57 p.m.)
Decimal	Number that includes a decimal point **Example** 23.45, -0.1, 4.0, 90809.0468
Integer	Whole number {..., -3, -2, -1, 0, 1, 2, 3, ...}
Nonnegative integer	Whole number greater than or equal to zero {0, 1, 2, 3, ...}
Positive integer	Whole number greater than zero {1, 2, 3, ...}
String	Sequence of letters, numbers, spaces, and special characters

Request-Level Fields for the DCC Service

Table 5   Request-Level Fields for the DCC Service

Field	Description	Required (R)/ Optional (O)	Data Type & Length
bill_city	City of the billing address.	ics_dcc (O)	String (50)
bill_country	Country of the billing address. Use the two-character *ISO Standard Country Codes*.	ics_dcc (O)	String (2)
bill_state	State or province of the billing address. For an address in the U.S. or Canada, use the *State, Province, and Territory Codes for the United States and Canada*.	ics_dcc (O)	String (2)
bill_zip	Postal code for the billing address. The postal code must consist of 5 to 9 digits. When the billing country is the U.S., the 9-digit postal code must follow this format: [5 digits][dash][4 digits] **Example** 12345-6789 When the billing country is Canada, the 6-digit postal code must follow this format: [alpha][numeric][alpha][space][numeric][alpha][numeric] **Example** A1B 2C3	ics_dcc (O)	String (10)
currency	Your local currency. For the possible values, see the *ISO Standard Country Codes*.	ics_dcc (R)	String (5)
customer_cc_ expmo	Two-digit month in which the credit card expires. Format: MM. Possible values: 01 through 12.	ics_dcc (O)	String (2)
customer_cc_expyr	Four-digit year in which the credit card expires. Format: YYYY. For FDC Nashville Global and FDMS South, you can send 2 digits or 4 digits. If you send 2 digits, they must be the last 2 digits of the year.	ics_dcc (O)	See description
customer_cc_ number	Customer's credit card number. For DCC, set this field to the first 6 to 10 digits of the credit card number.	ics_dcc (R)	Nonnegative integer (20)
customer_email	Customer's email address.	ics_dcc (O)	String (255)
customer_firstname	Customer's first name. For a credit card transaction, this name must match the name on the card.	ics_dcc (O)	String (60)

Table 5   Request-Level Fields for the DCC Service (Continued)

Field	Description	Required (R)/ Optional (O)	Data Type & Length
customer_lastname	Customer's last name. For a credit card transaction, this name must match the name on the card.	ics_dcc (O)	String (60)
customer_phone	Customer's phone number. CyberSource recommends that you include the country code when the order is from outside the U.S.	ics_dcc (O)	String (15)
merchant_id	Your CyberSource merchant ID. Use the same merchant ID for evaluation, testing, and production.	ics_dcc (R)	String (30)
merchant_ref_ number	Merchant-generated order reference or tracking number. CyberSource recommends that you send a unique value for each transaction so that you can perform meaningful searches for the transaction. For information about tracking orders, see *Getting Started with CyberSource Advanced for the SCMP API*.	ics_dcc (R)	String (50)
offer0...N	Offers (line items of the order) for the request. You must include **offer0** and the offer-level field **amount**. You cannot use **grand_total_amount**.	ics_dcc (R)	String (50)

Offer-Level Fields for the DCC Service

Table 6   Offer-Level Fields for the DCC Service

Field	Description	Required (R)/ Optional (O)	Data Type & Length
amount	Original amount in your local currency. You must include this field. You cannot use **grand_total_ amount**. This value cannot be negative. You can include a decimal point (.) in this field, but you cannot include any other special characters. The amount will be truncated at the request level to the correct number of decimal places.	ics_dcc (R)	Decimal (15)
merchant_product_ sku	Identification code for the product.	ics_dcc (O)	String (255)

Table 6   Offer-Level Fields for the DCC Service (Continued)

Field	Description	Required (R)/ Optional (O)	Data Type & Length
product_code	Type of product. This value is used to determine the category that the product is in: electronic, handling, physical, service, or shipping. The default value is `default`. For a list of the product codes, see *Credit Card Services Using the SCMP API.*	ics_dcc (O)	String (255)
product_name	Name of the product.	ics_dcc (O)	String (255)
quantity	The default is `1`.	ics_dcc (O)	Nonnegative integer (10)

Reply Fields for the DCC Service

Table 7   Reply Fields for the DCC Service

Field	Description	Returned By	Data Type & Length
currency	Your local currency. For the possible values, see the *ISO Standard Currency Codes*.	ics_dcc	String (5)
dcc_dcc_supported	Flag that indicates whether DCC can be used for the order. Possible values: ■ `TRUE`: DCC can be used. ■ `FALSE`: DCC cannot be used.	ics_dcc	String (5)
dcc_exchange_rate	Exchange rate. Includes a decimal point and a maximum of 4 decimal places.	ics_dcc	Decimal (13)
dcc_exchange_ rate_timestamp	Timestamp for the exchange rate. Format: YYYYMMDD~HH:MM where ~ denotes a space.	ics_dcc	String (14)
dcc_foreign_amount	Converted amount.	ics_dcc	String (15)
dcc_foreign_ currency	Billing currency. For the possible values, see the *ISO Standard Currency Codes*.	ics_dcc	String (5)
dcc_margin_rate_ percentage	DCC markup that is applied to the wholesale exchange rate. Includes a decimal point and 4 decimal places.	ics_dcc	Decimal (7)

Table 7   Reply Fields for the DCC Service (Continued)

Field	Description	Returned By	Data Type & Length
dcc_rcode	Indicates whether the service request was successful. Possible values: ■ −1: An error occurred. ■ 0: The request was declined. ■ 1: The request was successful.	ics_dcc	Integer (1)
dcc_rflag	One-word description of the result of the **ics_dcc** request.	ics_dcc	String (50)
dcc_rmsg	Message that explains the reply flag **dcc_rflag**. Do not display this message to the customer, and do not use the **dcc_rmsg** field to write an error handler.	ics_dcc	String (255)
ics_rcode	Indicates whether the entire request was successful. Possible values: ■ −1: An error occurred. ■ 0: The request was declined. ■ 1: The request was successful.	ics_dcc	Integer (1)
ics_rflag	One-word description of the result of the entire request.	ics_dcc	String (50)
ics_rmsg	Message that explains the reply flag **ics_rflag**. Do not display this message to the customer, and do not use this field to write an error handler.	ics_dcc	String (255)
merchant_ref_ number	Order reference or tracking number that you provided in the request. If you included multi-byte characters in this field in the request, the returned value might include corrupted characters.	ics_dcc	String (50)
request_id	Identifier for the request generated by the client.	ics_dcc	String (26)

DCC Request-Level Fields for Credit Card Services

The following table describes DCC request-level fields to include in requests for authorizations, captures, and credits. When you send an authorization, capture, or credit request with DCC data, you must include the basic fields required for every authorization, capture, or credit request. For information about the non-DCC fields required for these requests, see *Credit Card Services Using the SCMP API*.

Table 8   DCC Request-Level Fields for Credit Card Services

Field	Description	Required (R)/ Optional (O)	Data Type & Length
dcc_indicator	Flag that indicates whether DCC is being used for the order. Possible values: ■ 1: Converted: DCC is being used. ■ 2: Nonconvertible: DCC cannot be used. ■ 3: Declined: DCC could be used, but the customer declined it.	ics_auth ics_bill ics_credit Required if you called the DCC service for the purchase.	String (1)
exchange_rate	Exchange rate that was returned by the DCC service. Includes a decimal point and a maximum of 4 decimal places.	ics_auth ics_bill ics_credit Required when the DCC indicator is 1 or 3.	Decimal (13)
exchange_rate_ timestamp	Exchange rate timestamp that was returned by the DCC service. Format: YYYYMMDD~HH:MM where ~ denotes a space.	ics_auth ics_bill ics_credit Required when the DCC indicator is 1 or 3.	String (14)
foreign_amount	Converted amount that was returned by the DCC service.	ics_auth ics_bill ics_credit Required when the DCC indicator is 1 or 3.	Decimal (15)

Table 8   **DCC Request-Level Fields for Credit Card Services (Continued)**

Field	Description	Required (R)/ Optional (O)	Data Type & Length
foreign_currency	Billing currency that was returned by the DCC service. For the possible values, see the *ISO Standard Country Codes*.	ics_auth ics_bill ics_credit Required when the DCC indicator is 1 or 3.	String (5)

Examples

Example 1 DCC Request

```
bill_city=Mountain View
bill_country=US
bill_state=CA
bill_zip=94043
currency=USD
customer_cc_expmo=12
customer_cc_expyr=2015
customer_cc_number=4111111111111111
customer_email=jdoe@example.com
customer_firstname=John
customer_lastname=Doe
customer_phone=650-965-6000
ics_applications=ics_dcc
merchant_id=infodev
merchant_ref_number=482046C3A7E94F5BD1FE3C66C
offer0=product_code:electronic_software^merchant_product_
sku:swl^quantity:1^amount:2^product_name:CyberSoftware^offer_id:0
```

Example 2 DCC Reply

```
dcc_response_code=0
ics_rcode=1
ics_rmsg=Request was processed successfully.
request_id=19083406433304567
dcc_dcc_supported=TRUE
dcc_foreign_amount=3.14
dcc_foreign_currency=AUD
dcc_exchange_rate=1.5715
dcc_exchange_rate_timestamp=20071001 12:00
dcc_margin_rate_percentage=03.0000
dcc_rcode=1
currency=USD
ics_rflag=SOK
merchant_ref_number=73557862
```

Example 3   Credit Card Authorization Request with DCC Data

```
bill_address1=1295 Charleston Rd.
bill_city=Mountain View
bill_country=US
bill_state=CA
bill_zip=94043
currency=USD
customer_cc_expmo=12
customer_cc_expyr=2015
customer_cc_number=4111111111111111
customer_email=jdoe@example.com
customer_firstname=John
customer_lastname=Doe
customer_phone=650-965-6000
ics_applications=ics_auth
merchant_id=infodev
merchant_ref_number=482046C3A7E94F5BD1FE3C66C
offer0=product_code:electronic_software^merchant_product_
sku:swl^quantity:1^amount:2^product_name:CyberSoftware^offer_id:0
card_type=001
dcc_indicator=1
foreign_amount=3.14
foreign_currency=AUD
exchange_rate=1.5715
exchange_rate_timestamp=20071001 12:00
```

Example 4   Credit Card Authorization Reply

```
auth_auth_amount=2.00
auth_auth_avs=Y
auth_auth_code=123456
auth_auth_response=A
auth_avs_raw=YYY
auth_rcode=1
auth_rflag=SOK
auth_rmsg=Request was processed successfully.
currency=USD
ics_rcode=1
ics_rflag=SOK
ics_rmsg=Request was processed successfully.
merchant_ref_number=482046C3A7E94F5BD1FE3C66C
request_id=0305782650000167905080
```

Example 5   Credit Card Capture Request with DCC Data

```
auth_request_id=0305782650000167905080
merchant_ref_number=482046C3A7E94F5BD1FE3C66C
merchant_id=infodev
currency=USD
offer0=amount:2.00
ics_applications=ics_bill
dcc_indicator=1
foreign_amount=3.14
foreign_currency=AUD
exchange_rate=1.5715
exchange_rate_timestamp=20071001 12:00
```

Example 6   Credit Card Capture Reply

```
request_id=1019827520348290570293
merchant_ref_number=482046C3A7E94F5BD1FE3C66C
ics_rcode=1
ics_rflag=SOK
ics_rmsg=Request was processed successfully.
bill_trans_ref_no=02850840187309570
bill_bill_amount=2.00
bill_rcode=1
bill_rflag=SOK
bill_rmsg=Request was processed successfully.
currency=USD
```

Example 7   Credit Card Follow-On Credit Request with DCC Data

```
bill_request_id=1019827520348290570293
currency=USD
offer0=amount:2.00
ics_applications=ics_credit
merchant_ref_number=482046C3A7E94F5BD1FE3C66C
merchant_id=infodev
dcc_indicator=1
foreign_amount=3.14
foreign_currency=AUD
exchange_rate=1.5715
exchange_rate_timestamp=20071001 12:00
```

Example 8   Credit Card Follow-On Credit Reply

```
request_id=9827520348290570293101
merchant_ref_number=482046C3A7E94F5BD1FE3C66C
ics_rcode=1
ics_rflag=SOK
ics_rmsg=Request was processed successfully.
currency=USD
credit_trans_ref_no=02850840187309570
credit_credit_amount=2.00
credit_rcode=1
credit_rflag=SOK
credit_rmsg=Request was processed successfully.
```