

Card Transaction System (CTS) Guide

Version: 1.4
12 August 2022

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For the latest technical documentation, see the [Developer Portal](#).

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Publication number: WSG-1.4-8/12/2022

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1 About this Document

This guide describes the Card Transaction System (CTS) and explains how to use it to integrate and test your systems with the GPS Apex payment processing platform. It describes the CTS user interface and shows how to run the built-in standard test cases.

Target Audience

This guide is aimed at Program Managers and developers who want to test the integration of their systems and validate the setup of the External Host Interface (EHI) before going live in a production environment.

What's Changed?

To find out what's changed since the previous release, see the [Document History](#) section.

1.1 Related Documents

Refer to the table below for other documents which should be used in conjunction with this guide.

Document	Description
Smart Client Guide	How to use Smart Client, which is an administration application that can be used to view and manage cards and transactions in your programme.
EHI Guide	Describes the GPS External Host Interface (EHI) and provides specifications on how to process and respond to messages received from EHI.
Web Services Guide	Describes how to use the GPS SOAP API to send requests to GPS and provides specifications on the available web service calls.

Tip: See the [GPS Developer Portal](#) for a full suite of documentation.

2 Introduction

The Card Transaction System (CTS) enables you to test the integration of your card processing systems and validate the setup of your External Host Interface (EHI) before you go live in a production environment. A simple dashboard provides built-in standard test cases and a transaction history screen.

The service is written as a SOAP and REST service which enables you to submit card test transactions in the GPS UAT environment in line with your programme setup. All input parameters are strings or numerics, making integration and testing simple and fast.

Using CTS, you can:

- Run standard built-in tests to simulate typical POS, ATM, mail-order/telephone-order (MOTO) and e-commerce transactions
- Test authorisation messages for Chip & PIN, Contactless, Magstripe, ATM cash withdrawal, e-commerce, MOTO, and Scheme Stand-in Processing (STIP)
- Simulate clearing for all successful authorisations created on CTS. The Clearing screen displays a list of all eligible transactions that can be cleared to simulate the presentment/financial record
- Execute refunds (full or partial) for all cleared transactions
- Test recurrence by specifying if a transaction is recurring (for e-commerce or MOTO)
- Execute reversals for successful authorisations that have not been cleared
- Simulate foreign exchange (FX) transactions by specifying the country where the transaction occurs to simulate cross-border transactions
- View a history of all CTS transactions which you can filter and refine
- Simulate a scheme STIP message for POS and e-commerce transactions

2.1 How does CTS work?

The figure below illustrates how you can simulate and test the payment authorisation flow using CTS.

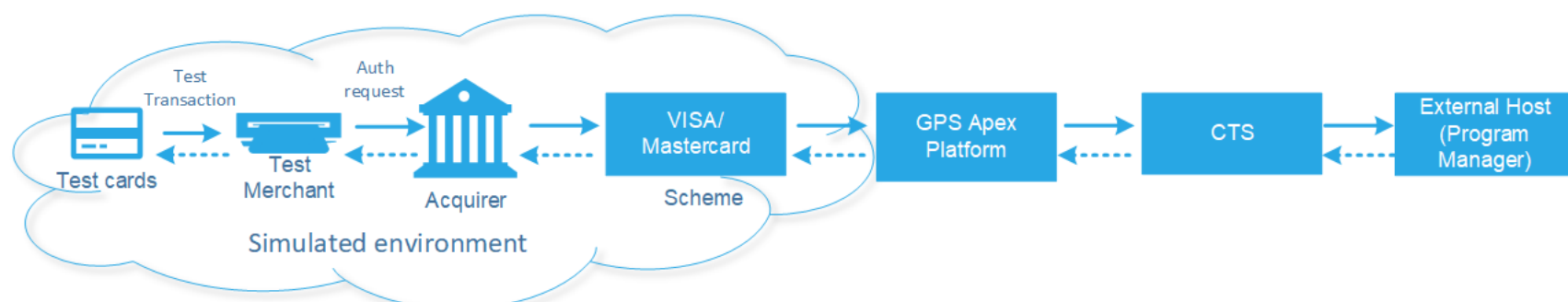


Figure 1: Testing authorisations using the Card Transaction System

3 Accessing CTS

This topic explains what you require to set up CTS and how you access the system.

3.1 Pre-requisites

To access CTS, you need the following:

- Your public IP address(es) added to the GPS ‘allowed’ list if different to Web Services IP address(es)
- Your programme set up in UAT
- A unique username and password for each user (you can use the same credentials which you use to access Smart Client UAT with CTS enabled)
- EHI set up at product level (refer to your Product Setup Form)

To submit test transactions, you will use GPS Web Services to create and activate test cards. If you are using EHI Mode 2 or 3, you will also need to load funds onto the test cards. You will need the 9-digit token, CVV2, and Expiry Date (provided in the Ws_CreateCard Web Service response). For the PIN, GPS recommends setting this in the Ws_CreateCard request, otherwise you will need to use Ws_PINControl to retrieve the generated PIN.

For more information about deploying CTS in your environment, contact your Account Manager.

3.2 Logging into CTS

You access CTS using a web browser. GPS recommends Google Chrome or Microsoft Edge.

To log into CTS:

1. Go to: <https://cts-uat.globalprocessing.net:54340/>. The Sign in screen appears:

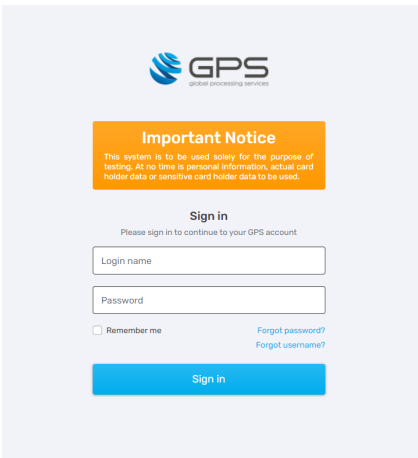


Figure 2: GPS Login Screen

2. Enter your username and password and click **Sign in**. The CTS Dashboard appears (described in the following section).

Note: If the message “*This site can’t be reached*” appears, this means that your IP address is not on the ‘allowed list’ on our system. Contact GPS by raising a [GPS JIRA](#) to request that your IP address is added to the allowed list.

4 Using the CTS Dashboard

This topic describes the main CTS screen and explains how to run the built-in tests available.

4.1 About the Main CTS Screen

After logging into the CTS platform, the main CTS screen appears:

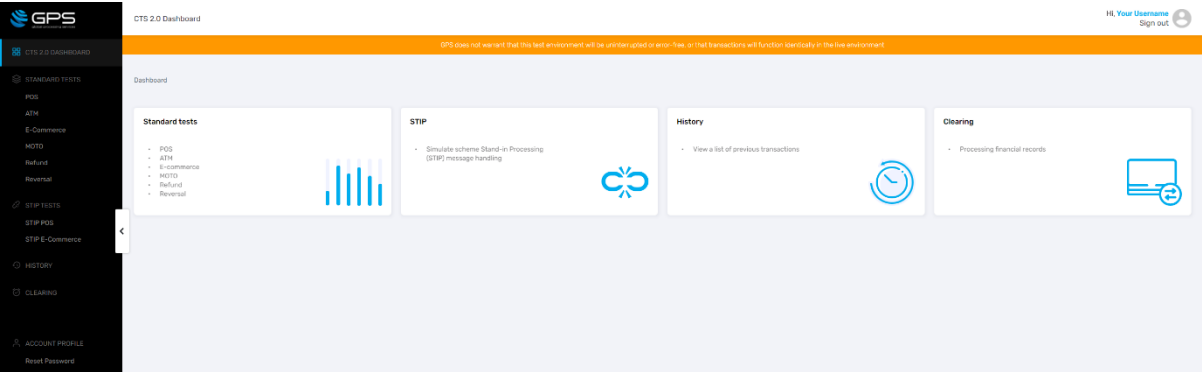


Figure 3: CTS Dashboard

The interface is divided into three main sections:

- **Toolbar** – Use the toolbar along the top of the screen to see your username and sign out.
- **Menus** – Use the menu on the left-hand side to select an option such as a standard test, display your account profile, and reset your password. See [Running Standard Tests](#) for more information.
- **Dashboard** – View the dashboard to access standard tests, simulations, and transaction history details. See [Using the CTS Dashboard](#) for more information.

4.2 Running Standard Tests

CTS provides the following standard simulation tests:

- **POS** – simulates a Point-of-Sale transaction completed through a card terminal
- **ATM** – simulates a balance enquiry or cash withdrawal transaction made on an Automated Teller Machine (ATM)
- **E-Commerce** – simulates an online, e-commerce transaction
- **MOTO** – simulates a Mail Order/Telephone Order (MOTO) transaction
- **Refund** – simulates a refund transaction initiated by a cardholder or merchant
- **Reversal** – simulates an acquirer reversing a previous authorisation

To run a test:

1. Click **Standard tests** on the dashboard and select a test (or choose a test from the menu). A screen appears showing the standard tests available:

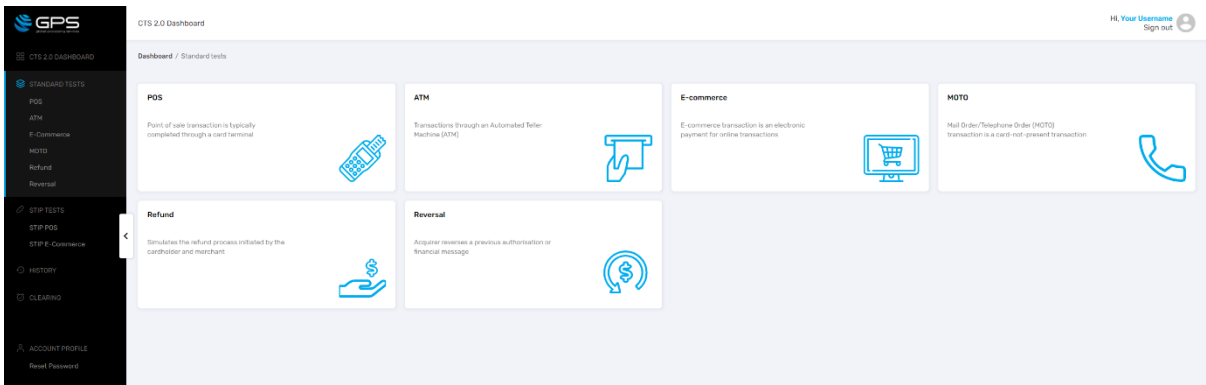



Figure 4: Standard Tests Screen

See the following sections for more information about the various tests.

POS Transaction Test

Use this test to simulate a Point-of-Sale (POS) transaction on a card terminal.


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CTS 2.0 DASHBOARD

STANDARD TESTS

- POS
- ATM
- E-Commerce
- MOTO
- Refund
- Reversal

STIP TESTS

- STIP POS
- STIP E-Commerce


HISTORY

CLEARING

ACCOUNT PROFILE

- Reset Password

CTS 2.0 Dashboard

Hi, [Your Username](#)
Sign out 

Dashboard / Standard tests / POS

PURCHASE AT POS TEST
Please enter test criteria to create a CTS request in the form below

☒ Contact chip

☐ Contactless

☐ Magstripe

Token*

Transaction currency*

Transaction amount*

PIN*

POS Location - Country*

RUN TEST

* Please populate all mandatory fields before running this test


Figure 5: POS Transaction Test Screen

1. Select the card element being tested:
 - Contact chip
 - Contactless
 - Magstripe
2. Enter the 9-digit **Token**, **Transaction currency**, **Transaction amount**, card **PIN** and **POS Location - Country**.

Note: If the transaction currency is different to the billing currency of the card, GPS provides an FX transaction based on static values pulled from a database. These rates may not represent the market value.
3. Click **Run Test**.

ATM Transaction Test

Use this test to simulate an ATM balance enquiry or cash withdrawal at an ATM location.


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CTS 2.0 DASHBOARD

STANDARD TESTS

- POS
- ATM
- E-Commerce
- MOTO
- Refund
- Reversal

STIP TESTS

- STIP POS
- STIP E-Commerce


HISTORY

CLEARING

ACCOUNT PROFILE

- Reset Password

CTS 2.0 Dashboard

Hi, [Your Username](#)
Sign out 

Dashboard / Standard tests / ATM

ATM TESTS

Please enter test criteria to create a CTS request in the form below

☒ ATM balance enquiry

☐ ATM cash withdrawal

Token*

Please enter token

PIN*

Please enter PIN

ATM Location*

United Kingdom

RUN TEST

* Please populate all mandatory fields before running this test


Figure 6: ATM Transaction Test Screen

1. Select the ATM element being tested:
 - ATM balance enquiry
 - ATM cash withdrawal
2. Enter the 9-digit **Token**, **Transaction currency**, **Transaction amount**, card **PIN** and **ATM Location** (country).

Note: If the transaction currency is different to the billing currency of the card, GPS provides an FX transaction based on static values pulled from a database. These rates may not represent the market value.
3. Click **Run Test**.

E-commerce Transaction Test

Use this test to simulate an e-commerce transaction made through an online website.



CTS 2.0 DASHBOARD

STANDARD TESTS

POS

ATM

E-Commerce

MOTO

Refund

Reversal

STIP TESTS

STIP POS

STIP E-Commerce

HISTORY

CLEARING

ACCOUNT PROFILE

Reset Password

CTS 2.0 Dashboard

Hi, **Your Username**
Sign out

Dashboard / Standard tests / E-Commerce


E-COMMERCE TEST

Please enter test criteria to create a CTS request in the form below

☐ Recurring

Token*

Please enter token

CVV2 

Please enter CVV2

Expiry date*

MM/YY

Transaction currency*

Please select...

Transaction amount*

Please enter amount

Merchant Location*

United Kingdom

RUN TEST

* Please populate all mandatory fields before running this test

Figure 7: E-Commerce Transaction Test Screen

1. Enter the 9-digit **Token**, the cards' **CVV2** (if required) and the card **Expiry date**.
2. Enter the **Transaction currency**, **Transaction amount**, and **Merchant Location** (country).


Note: If the transaction currency is different to the billing currency of the card, GPS provides an FX transaction based on static values pulled from a database. These rates may not represent the market value.

3. In **Merchant Location**, specify a location for the merchant.
4. Click **Run Test**.

Note: To simulate a recurring transaction, select **Recurring**.

MOTO

Use this test to simulate a Mail and Telephone Order (MOTO) transaction, which is a payment made over the telephone (for example, via a call centre) or via a mail order catalogue.


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CTS 2.0 DASHBOARD

STANDARD TESTS

- POS
- ATM
- E-Commerce
- MOTO
- Refund
- Reversal

STIP TESTS

- STIP POS
- STIP E-Commerce


HISTORY

CLEARING

ACCOUNT PROFILE

- Reset Password

CTS 2.0 Dashboard

Hi, [Your Username](#)
Sign out 

Dashboard / Standard tests / MOTO


MOTO TEST

Please enter test criteria to create a CTS request in the form below

☐ Recurring

Token*

Please enter token

CVV2 

Please enter CVV2

Expiry date*

MM/YY

Transaction currency*

Please select...

Transaction amount*

Please enter amount

Merchant Location*

United Kingdom

RUN TEST

* Please populate all mandatory fields before running this test

Figure 8: MOTO Transaction Test Screen


1. To simulate a recurring transaction, select **Recurring**.
2. Enter the 9-digit **Token**, the card’s **CVV2** (if required) and the card **Expiry date**.
3. Enter the **Transaction currency**, **Transaction amount**, and **Merchant Location** (country).

Note: If the transaction currency is different to the billing currency of the card, GPS provides an FX transaction based on static values pulled from a database. These rates may not represent the market value.

4. Click **Run Test**.

Refund

Use this test to simulate a refund process initiated by the cardholder and merchant.



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CTS 2.0 DASHBOARD

STANDARD TESTS

POS

ATM

E-Commerce

MOTO

Refund

Reversal

STIP TESTS

STIP POS

STIP E-Commerce


HISTORY

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ACCOUNT PROFILE

Reset Password

CTS 2.0 Dashboard

Hi, [Your Username](#) 

Sign out

Dashboard / Standard tests / Refund

REFUND TESTS

Please enter test criteria to create a CTS request in the form below

Transaction ID*

Please enter transaction ID

Transaction Details

Transaction amount:

Authorisation time:

Clearing time:

Refund amount*

Please enter amount

RUN TEST

* Please populate all mandatory fields before running this test

Figure 9: Refund Screen

1. Enter the 10-digit **Transaction ID** that corresponds to a transaction that has been successfully cleared.
2. Enter the **Refund amount** (this can be a partial amount, or full amount which cannot exceed the total amount of the transaction).
3. Click **Run Test**.

Reversals

Use this test to simulate an acquirer reversing a previous authorisation.

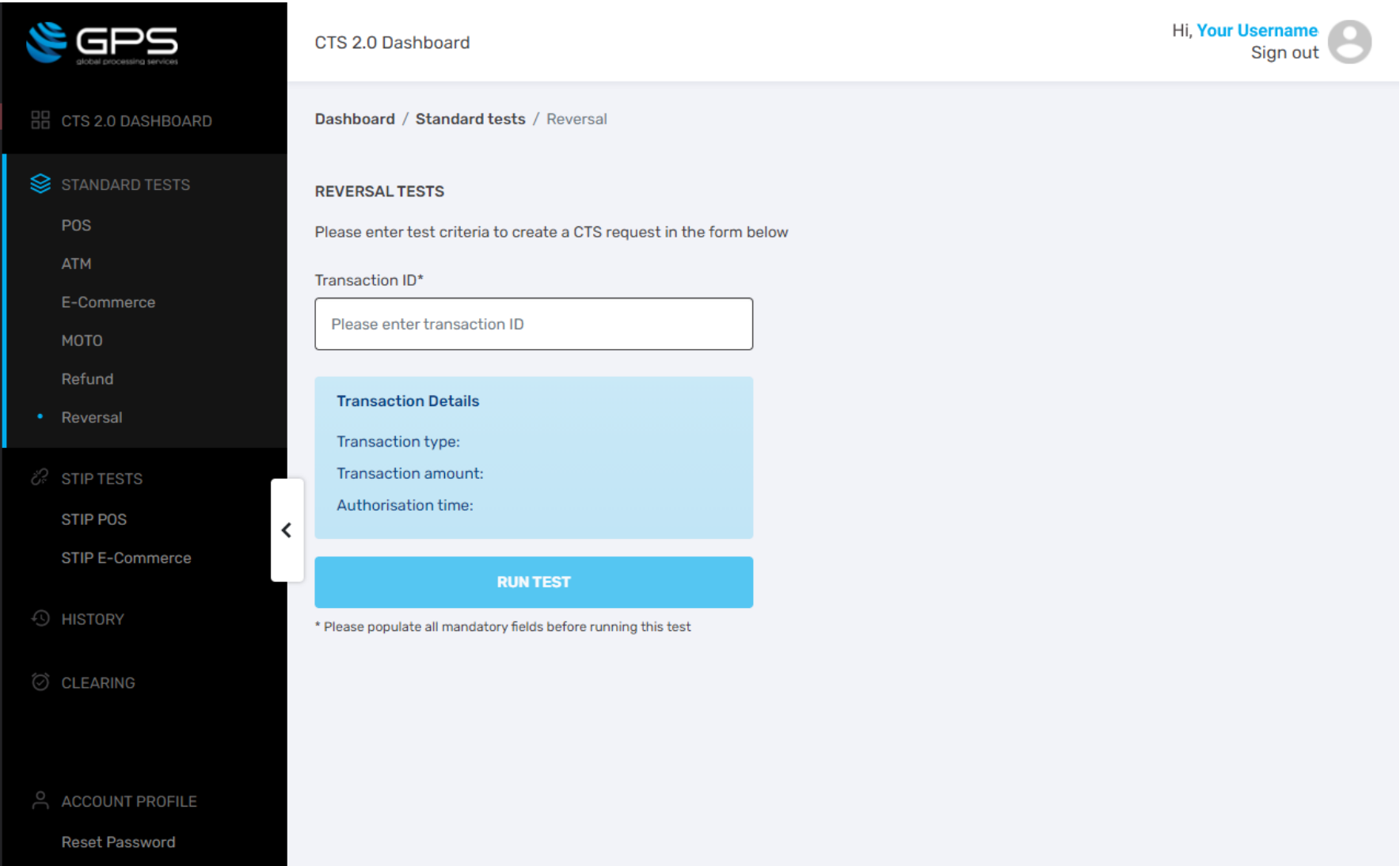


Figure 10: Reversals Screen

- 1. Enter the 10-digit **Transaction ID** that corresponds to an authorisation.
- 2. Click **Run Test**.

4.3 Running a STIP test

Use this test to simulate scheme Stand-in Processing (STIP) messages for POS and e-commerce transactions.

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CTS 2.0 DASHBOARD

STANDARD TESTS

POS

ATM

E-Commerce

MOTO

Refund

Reversal

STIP TESTS

STIP POS

STIP E-Commerce


HISTORY

CLEARING

ACCOUNT PROFILE

Reset Password

CTS 2.0 Dashboard


Hi, [Your Username](#) 
[Sign out](#)

Dashboard / STIP tests / POS

STIP PURCHASE AT POS TEST

This card tests GPS handling of stand-in processing messages sent by a scheme in the unlikely event that GPS servers do not receive the original transaction request or do not respond within scheme time limits.

STIP scenario:

Scheme decision: 

☒ "0100 A" not received

☒ Accepted

☐ "0100 A" received

☐ Declined

POS type:

☒ Contact chip

☐ Contactless

☐ Magstripe

Token*

Please enter token

Transaction currency*

Please select...

Transaction amount*

Please enter amount

RUN TEST

* Please populate all mandatory fields before running this test

Figure 11: STIP Tests Screen

1. Select the STIP scenario and decision that you would like to simulate.
2. Choose the POS type from the list.
3. Enter the 9-digit **Transaction ID** that corresponds to an authorisation.
4. Enter the **Transaction currency** and **Transaction amount**.

Note: If the transaction currency is different to the billing currency of the card, GPS provides an FX transaction based on static values pulled from a database. These rates may not represent the market value.

5. Click **Run Test**.

4.4 Transaction History

The History screen displays a list of all the transactions made using CTS.

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CTS 2.0 DASHBOARD

STANDARD TESTS

POS

ATM

E-Commerce

MOTO

Refund

Reversal

STIP TESTS

STIP POS

STIP E-Commerce

HISTORY

CLEARING

ACCOUNT PROFILE

Reset Password

CTS 2.0 Dashboard

Hi, **Your Username**

Sign out

Dashboard / History

HISTORY

◀ Page 1 of 10 ▶

🔄

Please enter token...

Filters ^

Test Type

Please choose... | ▾

Transaction Status

Please choose... | ▾

Start Date

Please choose...

End Date

Please choose...

Submit

Test Type	Token	Transaction ID	Date ▾	Time	Transaction Status
POS Contact Chip	123456789	1234567890	2021-06-01	10:59:55	Accepted
POS Contact Chip	123456789	1234567890	2021-06-01	10:59:41	Accepted
Reversal	123456789	1234567890	2021-05-27	16:46:57	Accepted
STIP POS Contact Chip Decline No 0100	123456789	1234567890	2021-05-27	16:46:29	STIP Accepted
STIP POS Contact Chip Decline 0100	123456789	1234567890	2021-05-27	16:46:17	STIP Accepted
STIP POS Contact Chip Accept 0100	123456789	1234567890	2021-05-27	16:46:02	STIP Accepted
STIP POS Contact Chip Accept No 0100	123456789	1234567890	2021-05-27	16:45:50	STIP Accepted
POS Contact Chip	123456789	1234567890	2021-05-27	16:45:07	Accepted
POS Contact Chip	123456789	1234567890	2021-05-27	13:28:05	Accepted
Refund POS Contact Chip	123456789	1234567890	2021-05-27	11:36:01	Cleared

96 item(s)

10 items/page

◀ Page 1 of 10 ▶

Figure 12: History Screen

Filtering transactions

To filter transactions, click **Filters**. The filter pane appears where you can refine the list of transactions:

Test Type

Please choose... | ▾

Transaction Status

Please choose... | ▾

Start Date

Please choose...

End Date

Please choose...

Submit

Figure 13: Filter pane

Click **Submit** to apply a filter.

4.5 Clearing

The Clearing screen displays a list of all eligible transactions made using CTS that can be cleared to simulate the pre-sentment/financial record.

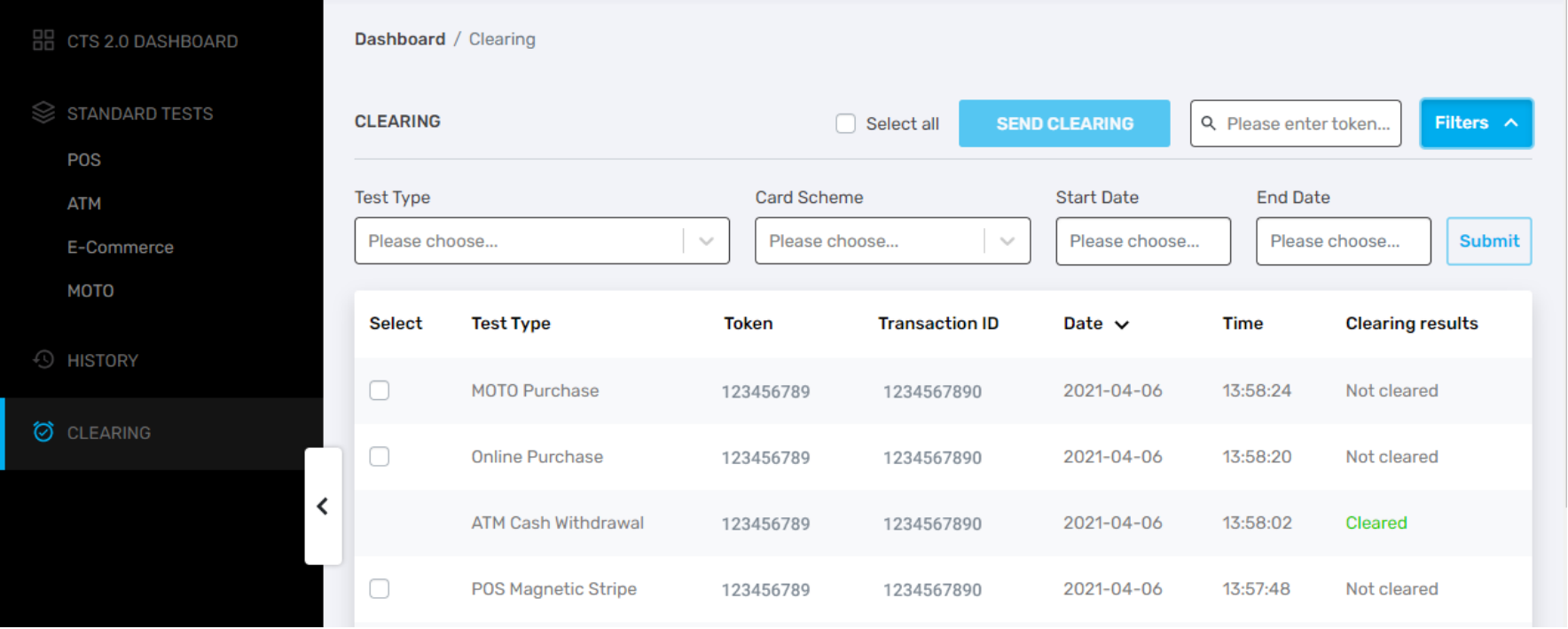


Figure 14: Clearing Screen

Select the authorisations you want to send to clearing, and then click **Submit**.
To filter transactions, click **Filters**. The filter pane appears where you can refine the list of transactions.

5 Resetting your Password

The **Reset Password** option enables you to reset your password for CTS.

Note: Resetting your password will impact other GPS-related systems that use these credentials.

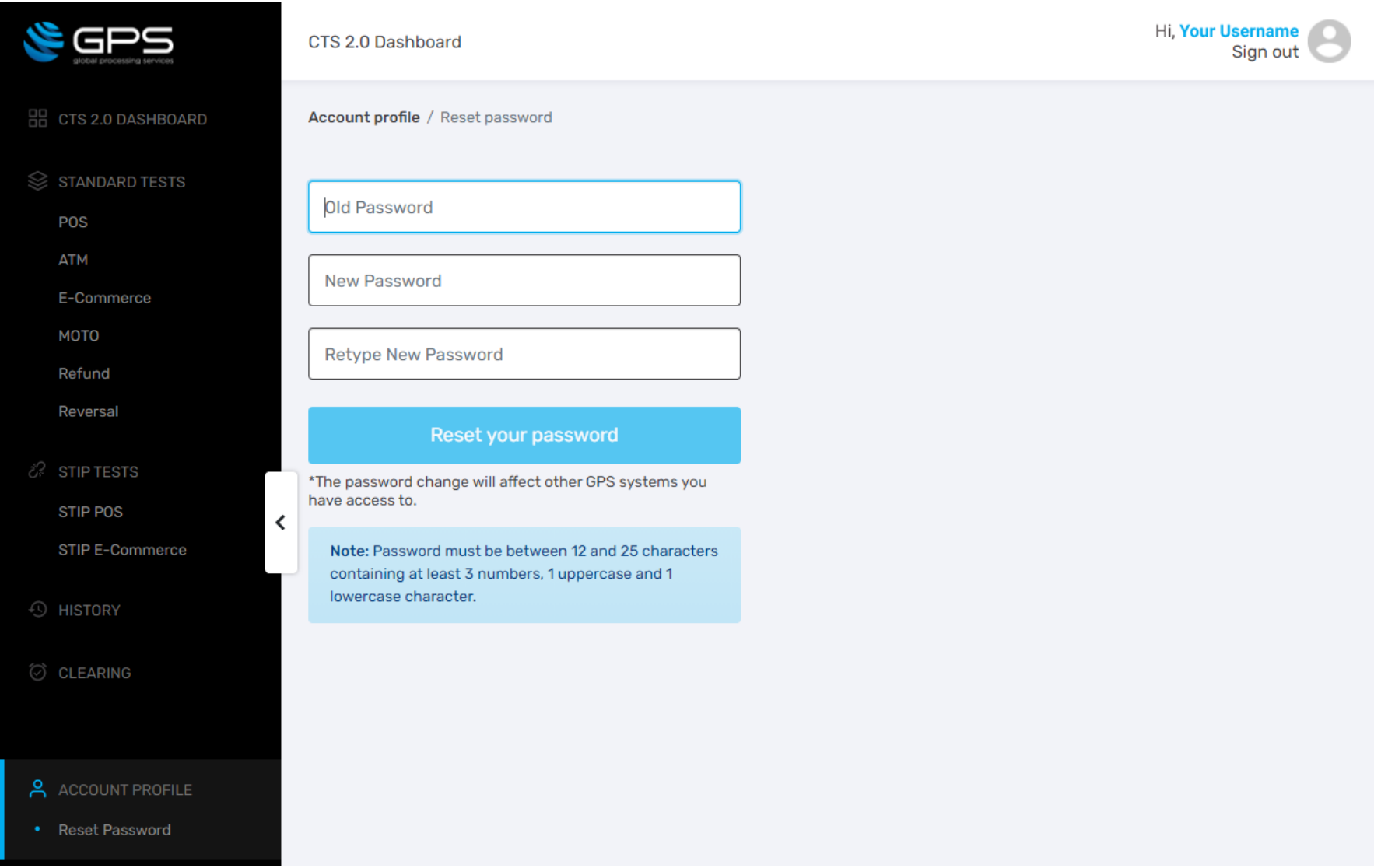


Figure 15: Reset Password Screen

You can use Smart Client in the UAT environment to see the transactions that have taken place on the card, by searching on either the 9-digit token or transaction ID provided in the CTS response. For details, see the [Smart Client User Guide](#).



FAQs

This section provides answers to frequently asked questions about CTS.

Q. What MCC codes are used?

The following Merchant Category Codes (MCC) are used:

- E-commerce: 5734 – Computer Software Stores
- MOTO: 5311 – Department Stores
- POS: 5734 – Computer Software Stores
- ATM: 6011 – Automated Cash Disburse

Q. What merchant name is displayed on the transactions?

The following Merchant names are displayed:

- E-commerce: e-commerce merchant
- MOTO: moto merchant
- POS: Shop with Chip POS
- ATM: offsite ATM

Q. Are PSD2 counter limits validated in CTS?

Currently the CTS system does not validate against any PSD2 counters that may be setup in the system as there are several different hosts that manage these limits.

Q. Are contactless limits validated in the CTS tests?

Due to the contactless limits varying by country, currency and merchant, CTS is unable to validate this.

Q. What FX Rate does CTS provide?

If the transaction currency is different to the billing currency of the card, GPS provides an FX transaction based on static values pulled from a database. These rates may not represent the market value.

Contact Us

Please contact us if you have queries relating to this document. Our contact details are provided below.

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Technical Publications

If you want to contact our technical publications team directly, for queries or feedback related to this guide, you can email us at: docs@globalprocessing.com.

Glossary

This page provides a list of glossary terms used in this guide.

A

Acquirer

The merchant acquirer or bank that offers the merchant a trading account, to enable the merchant to take payments in store or online from cardholders.

ATM

Automated Teller (Cash) Machine.

Authorisation

Stage where a merchant requests approval for a card payment by sending a request to the card issuer to check that the card is valid, and that the requested authorisation amount is available on the card. At this stage the funds are not deducted from the card.

C

Contact chip

Card transaction where the POS terminal reads and validates the card's chip.

Contactless

Secure payment method using a debit or credit card or another payment device by using RFID technology and near-field communication. To use the system, a cardholder taps the payment card near a POS terminal equipped with the technology.

CVV2

The Card Verification Value (CVV) is a 3-digit number on VISA and MasterCard branded credit and debit cards. Cardholders are typically required to enter the CVV during any online or cardholder not present transactions. CVV numbers are also known as CVV2 numbers, which are the same as CVV numbers, except that they have been generated by a 2nd generation process that makes them harder to guess.

E

EH

The GPS External Host Interface (EHI) is a system which provides real-time transactional data and control over your transaction authorisations.

EMV

EMV is a payment standard for smart payment cards, payment terminals and automated teller machines (ATMs). EMV is an acronym for "Euro-pay, Mastercard, and Visa", the three companies that created the standard. EMV cards are smart cards, also called chip cards, integrated circuit cards, or IC cards which store their data on integrated circuit chips, in addition to magnetic stripes for backward compatibility.

External Host

The external system to which GPS sends real-time transaction-related data. The URL to this system is configured within GPS per programme or product. The Program Manager uses their external host system to hold details of the balance on the cards in their programme and perform transaction-related services, such as payment authorisation, transaction matching and reconciliation.

G

GPS Web Services

GPS's SOAP based Application Program Interface (API) which enables integration of your systems with GPS.

M

Magstripe

The magnetic stripe on the back of the card. Can be used for a card point of sale (POS) transaction using a merchant POS terminal.

Merchant

The shop or store providing a product or service that the cardholder is purchasing. A merchant must have a merchant account, provided by their acquirer, in order to trade. Physical stores use a terminal or card reader to request authorisation for transactions. Online sites provide an online shopping basket and use a payment service provider to process their payments.

Merchant Category Code (MCC)

A unique identifier of the merchant, to identify the type of account provided to them by their acquirer.

MOTO

Mail and Telephone Order (MOTO) transaction, which is a payment made over the telephone (e.g., via a Call centre) or via a mail order catalogue.

P**POS**

Point of Sale transaction.

S**Smart Client**

Smart Client is GPS's user interface for managing your account on the GPS Apex system. It is also called Smart Processor GPS. Smart Client is installed as a desktop application and requires a VPN connection to GPS systems in order to be able to access your account.

Stand In Processing (STIP)

The card network (Visa and Mastercard) may perform approve or decline a transaction authorisation request on behalf of the card issuer. Depending on your GPS mode, GPS may also provide STIP on your behalf, where your systems are unavailable.

V**Validation**

Checks to confirm the card is valid, such as CHIP cryptograms, mag-stripe data (if available) and expiry date

Document History

Version	Date	Description	Author
1.4	12/08/2022	New guide layout and HTML version now available	PC
1.3	07/06/2022	Documentation improvements	AL
1.2	06/04/2021	Additional POS tests added STIP added	AW
	06/04/2022	Reversals added Minor text amendments	WS
1.1	13/04/2021	Clearing added	AW
1.0	09/02/2021	First version	AW