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ONLINE PAYMENT EXPERTS

AVS & Security Code Checks

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1   Introduction

The Address Verification System and security code checks provide our merchants with an additional level of security when processing a transaction. They allow you to carry out checks regarding the validity of the address and security code information provided by the customer.

The purpose of this document is to provide an overview of both processes, and to explain how to interpret the responses in order to reduce the risk of fraud on your account.

1.1   Requirements

The availability of the AVS and security code check facility is dependent on the acquiring bank and card issuer, although it should be noted that most card based payment methods support this functionality.

The ability to conduct address checks is dependent on the location of your acquiring bank in relation to the location of the issuing bank of the card being presented. Most acquirers do support the process but only on locally issued cards. All UK cards and a number of US cards are address checked by all UK acquirers.

Security code checks are performed on the majority of card payments performed worldwide and the results are checked internationally by all acquirers.

Please contact Secure Trading for further information on the supported acquirers and card types (see section 6).

1.2   Getting Started

This document details two separate processes, namely the Address Verification System (AVS) and security code checks. Both checks are performed during the authorisation process between the customer's card issuer and your acquiring bank.
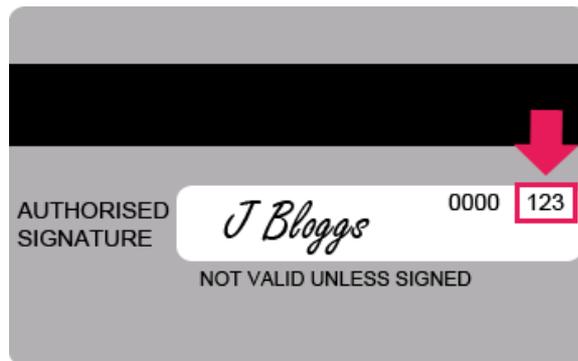
1.2.1   About AVS

A customer's address is checked against the address that the card issuer holds for that card. The customer's bank will indicate to the acquiring bank whether there is a match between the entered address and the registered card address. The checks performed are focussed on the house number and postcode provided by the customer.

1.2.2   About Security Code checks

The security code is a three or four digit number printed on credit and debit cards. It is not stored by Secure Trading, and also **must never** be kept by merchants.

> ⚠ **It is imperative that you never store the customer's security code.**
> **Please ensure that no log files or databases contain the security code information on your system.**

The number is often printed on the back of the card, at the top right of the signature strip (as shown above), but there are some variations.

> ⓘ **Please note** that on American Express cards, the security code has four digits, and is printed on the front of the card, on the right-hand side, above the embossed card number.

The security code that the customer has entered is checked against the security code that the card issuer holds for their card. The customer's bank will indicate to the acquiring bank whether there is a match between the entered security code and the correct security code associated with the card.

2   Process Overview

Here is how the AVS and security code checks fit into the standard payment process:

1. The customer opts to perform a payment and their details are passed on to Secure Trading.

2. Secure Trading sends this information to the acquiring bank.

3. The acquiring bank contacts the customer's bank. The customer's bank checks the premise, postcode and security code entered by the customer against what is on their records.

4. The acquiring bank returns the results of these checks to Secure Trading.

5. Secure Trading assigns response codes and makes this information available to you (see section 2.2).

6. Depending on your account configuration, Secure Trading may perform certain actions on the transaction if the results of the AVS and security code checks do not meet a required standard (see section 3.2).

> *(i)* **Please note** that some acquirers will use the results of the AVS or security code checks to decline the transaction, if either the address or security code is incorrect. Others will authorise the transaction and allow you to decide whether or not to continue with the transaction.

2.1   Required Fields

The following fields are required by the banks in order to check the customer's address and security code:

2.1.1   For Payment Pages Requests

For checks to be successfully performed on a customer's details, the customer will need to input their billing address and card details (including the security code) on the Payment Pages.

If the customer fails to submit the required information, the checks will return a "not given" response.

2.1.2   Merchants using API Solution

When sending XML requests to Secure Trading, the following tags need to be included in order to process the AVS/security code checks:
- billing/premise
- billing/postcode
- billing/payment/securitycode

If the XML Request does not include the required information, the checks will return a "not given" response.

> For information regarding XML Requests, please refer to the **XML Specification**. All Secure Trading documents can be found on our website.

2.2   Response Codes

There are four possible responses following AVS and security code checks. Each response is assigned a distinct code, as shown in the following table:

Code	Description	Comment
0	**"Not Given"**	Your acquirer was not provided with the information required to perform this check.
1	**"Not Checked"**	Your acquirer was unable to perform this check on the information provided.*
2	**"Matched"**	The information provided by the customer matches that on the card issuer's records.
4	**"Not Matched"**	The information provided by the customer does NOT match that on the card issuer's records.

Together, the AVS and security code checks consist of three total checks, and Secure Trading assigns a response code for each.
- Billing premise
- Billing postcode
- Card security code

See section 3.1 for information on viewing the response codes using MyST.

We recommend that merchants with a STAPI or Web Services implementation refer to section 3.4 for information on how to check the response codes in the XML Response.

> ℹ️ *A "not checked" response can occur when the card issuer does not support address or security code checking for the card supplied or that the information was not provided. Most foreign cards issued will not be address checked.

3 Viewing the Results

You can view the result of the AVS and security code checks using the following methods:

- // You can sign in to MyST and view transaction details - **see section 3.1**.

- // If you are processing payments using Payment Pages, you can configure Secure Trading (STR) redirects or URL notifications to include the results of the checks - **see section 3.2**.

- // If you are processing payments using Payment Pages, you can configure user-defined (UDR) redirects or URL notifications to include the results of the checks - **see section 3.3**.

- // If you are processing payments using STAPI or Web Services, you will receive a breakdown of the results of the checks within the XML Response - **see section 3.4**.

3.1 In MyST

> This section assumes a basic understanding of how to use MyST.
> For further information, please refer to the **MyST User Guide**.
> All Secure Trading documents can be found on our website.

3.1.1 Transaction Search page

After you sign in to MyST, you are able to view all transactions processed on your account using the "**Transaction Search**" page (linked in the left side menu).

Click the "**Fields**" tab **(1)** and in the "Security details" box, select "**Security response**" **(2)**.

Feel free to customise other fields and filters available to you, such as the range of dates the transactions were processed in and the payment types used.

Then click "**Search**" **(3)**.

You will be presented with a table listing all the transactions that met the criteria you specified in the filters. Included in this table is a column for the security response that is abbreviated to "Sec resp" **(4)**.

Transaction ref	Account	Request	Payment	Billing name	Timestamp	Curr	Amount	Settle amount	Status	Error code	Sec resp
11-9-80228	MOTO	AUTH	ELECTRON	Jane Jones	2013-12-23 10:26:43	GBP	£384.92	£384.92	2	0	404
11-9-80227	MOTO	AUTH	ELECTRON	John Jones	2013-12-23 10:26:39	USD	$349.35	$349.35	2	0	411
11-9-80226	ECOM	AUTH	VISA	John Doe	2013-12-23 10:26:36	USD	$985.57	$985.57	2	0	422
11-9-80225	ECOM	AUTH	MASTERCARDDEBIT	André Smith	2013-12-23 10:26:31	GBP	£417.17	£417.17	3	70000	111
11-9-80224	MOTO	AUTH	ELECTRON	Doe	2013-12-23 10:26:29	GBP	£142.17	£142.17	3	70000	101
11-9-80223	ECOM	AUTH	ELECTRON	Jim Smith	2013-12-23 10:26:28	GBP	£340.27	£340.27	0	0	201
11-9-80222	ECOM	AUTH	MASTERCARD	André Smith	2013-12-23 10:26:24	GBP	£829.47	£829.47	2	0	414
11-9-80221	MOTO	AUTH	ELECTRON		2013-12-23 10:26:22	USD	$560.88	$560.88	2	0	444
11-9-80220	ECOM	AUTH	VISA	Jones	2013-12-23 10:26:18	GBP	£187.18	£187.18	3	70000	101
11-9-80219	MOTO	AUTH	ELECTRON	Smith	2013-12-23 10:26:16	USD	$973.73	$973.73	0	0	222
11-9-80218	MOTO	AUTH	MASTERCARDDEBIT	Jones	2013-12-23 10:26:14	USD	$334.07	$334.07	0	0	204
11-9-80217	MOTO	AUTH	ELECTRON	Jane O'Connor	2013-12-23 10:26:10	USD	$206.63	$206.63	0	0	202
11-9-80216	MOTO	AUTH	MASTERCARDDEBIT	Smith	2013-12-23 10:26:08	GBP	£574.84	£574.84	0	0	214
11-9-80215	ECOM	AUTH	MASTERCARDDEBIT	John Doe	2013-12-23 10:26:03	GBP	£245.40	£245.40	3	70000	101
11-9-80214	MOTO	AUTH	MASTERCARDDEBIT	John Smith	2013-12-23 10:25:59	GBP	£737.31	£737.31	2	0	444
11-9-80213	ECOM	AUTH	VISA	Joe Jones	2013-12-23 10:25:55	GBP	£561.96	£561.96	2	0	444
11-9-80212	ECOM	AUTH	MASTERCARD	Jane	2013-12-23 10:25:51	GBP	£855.34	£855.34	0	0	244
11-9-80211	ECOM	AUTH	MASTERCARD	John Doe	2013-12-23 10:25:50	USD	$119.84	$119.84	2	0	441
11-9-80210	ECOM	AUTH	VISA	Jim O'Connor	2013-12-23 10:25:48	USD	$857.57	$857.57	2	0	404
11-9-80209	ECOM	AUTH	MASTERCARD	Jim	2013-12-23 10:25:45	USD	$650.65	$650.65	2	0	444

Display 20 transactions   Search: 2013-12-23 00:00 to 2013-12-23 23:59

For each Authorisation transaction, there are three numbers representing the results of checks on the security code, postcode and first line of the address respectively. The values of these numbers are used to represent the different responses received for each transaction and are detailed further in section 2.2.

The following example shows an authorisation where all three checks returned a "2" ("Matched") response from the customer's bank:

Sec resp

222

1st number	2nd number	3rd number
Security code	Postcode	First Line of Address
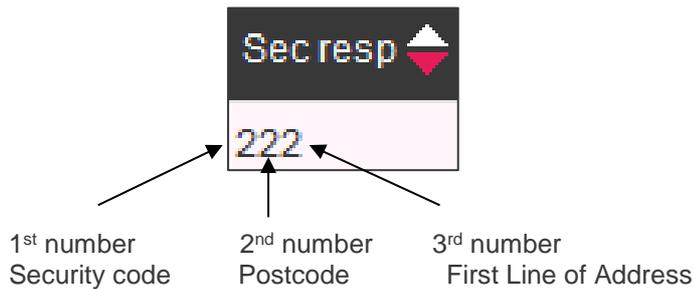
For additional information on a transaction, you can click its transaction reference in the search table **(5)** to be presented with the single transaction view. See section 3.1.2 for further information.

3.1.2 Single Transaction View

If you already know the transaction reference of a transaction, you can immediately access the respective single transaction view by using the search utility on the left of any MyST page (under "Transactions").

TRANSACTIONS

6-9-596690 🔍

// Transaction search
// Reporting
// Virtual terminal
// Email payment
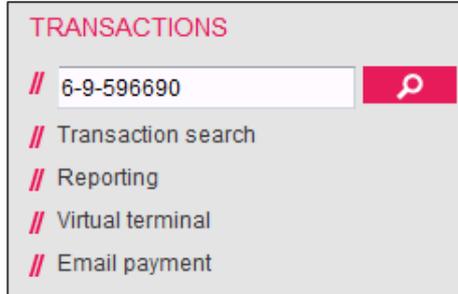
In the single transaction view, the results of the AVS and security code checks can be found under the "Security Response" heading.

My Transaction: 23-9-80722

Summary	⅀ Pending settlement			Print
Site reference	test_site12345			
Live status	0 - Test			
Request	AUTH			
Timestamp	2014-02-28 16:18:51			
Error code	0 - Ok			

Transaction details	Related transactions

Transaction Details

Transaction reference	23-9-80722	Parent	
Account	ECOM	Authorised amount	£123.99
Currency	GBP	Auth code	TEST
Customer IP	10.3.16.16	Fraud rating	-1 (Not checked)
Order reference			

Payment Details

Payment type	VISA	Expiry date	01/2016
Card number	411111######1111	Issuer	SecureTrading Test Issuer1
Issuer country	US		

Acquirer Details

Acquirer response	00		

Settlement Details

Settle status	0 - Pending settlement	Settle amount	£123.99
Settle due date	2014-02-28	Last altered by	

Security Response

Security code	Matched	House no.	Matched
Postcode	Matched		

In the screenshot of the single transaction view above, the green "Matched" text seen beside the "Security Response" fields indicates that all the checks matched the details entered by the customer to the details held by their card issuer.

For a breakdown of the different responses that can be displayed, see section 2.2.

3.2   In Secure Trading (STR) redirects and URL notifications

If you are processing payments using Payment Pages, and have enabled **"STR"** Payment Pages redirect or URL notification rules on your site reference, you can include the result of the AVS and security code checks by updating your POST to Secure Trading, as explained below. Each security response field returned is assigned a code representing the results of checks performed. See section 2.2 for a full list of possible response codes.

> (i) If you haven't already configured redirects or URL notifications, please be aware that the values of the fields used below need to be included in the string used to generate your "request site security" hash. This is explained in the **Payment Pages Setup Guide**.

3.2.1   Configuring Payment Pages redirects

Update your POST to include the following:

```
<!--Enables rule that redirects the customer following a successful
transaction-->
<input type=hidden name="ruleidentifier" value="STR-6">

<!--Update the below with the URL for the redirect-->
<input type=hidden name="successfulurlredirect"
value="http://yourwebsite.com/successful">

<!--This requests that the result of AVS and security code checks are
included in the redirect-->
<input type="hidden" name="stextraurlredirectfields"
value="securityresponseaddress">
<input type="hidden" name="stextraurlredirectfields"
value="securityresponsepostcode">
<input type="hidden" name="stextraurlredirectfields"
value="securityresponsesecuritycode">
```

For further information on configuring redirects, please refer to the **Payment Pages Setup Guide**.

3.2.2   Configuring URL notifications

Update your POST to include the following:

```
<!--This enables the successful URL notification rule-->
<input type=hidden name="ruleidentifier" value="STR-8">

<!--Update the below with the URL the notification will be sent to-->
<input type=hidden name="successfulurlnotification"
value="http://yourwebsite.com/successful">

<!--This requests that the result of AVS and security code checks are
included in the URL notification-->
<input type="hidden" name="stextraurlnotifyfields"
value="securityresponseaddress">
<input type="hidden" name="stextraurlnotifyfields"
value="securityresponsepostcode">
<input type="hidden" name="stextraurlnotifyfields"
value="securityresponsesecuritycode">
```

Important: You must configure your system to accept the incoming URL notifications on port 443. If the response site security hash is correct, your system must respond with an HTTP 200 OK response (e.g. "HTTP/1.0 200 OK") within 8 seconds of receiving a notification.

For further information on configuring URL notifications, please refer to the **Payment Pages Setup Guide**.

3.3 In user-defined (UDR) redirects and URL notifications

If you are processing payments using Payment Pages, and have enabled **"UDR"** Payment Pages redirect or URL notification rules on your site reference, you can include the result of the AVS and security code checks by updating your previously configured rule actions, as explained below.

Start by signing in to MyST and navigate to the "**Rule manager**" by clicking the link from the menu on the left.
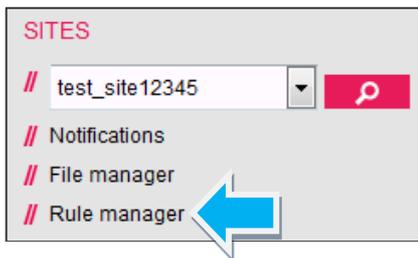
3.3.1 Configuring Payment Pages redirects

In the Rule Manager, select your site reference from the top-left, and action type "**Payment pages redirect**", and click "**Change**".

Select the redirect action you would like to update and on the page shown, click the "**Field selection**" tab.
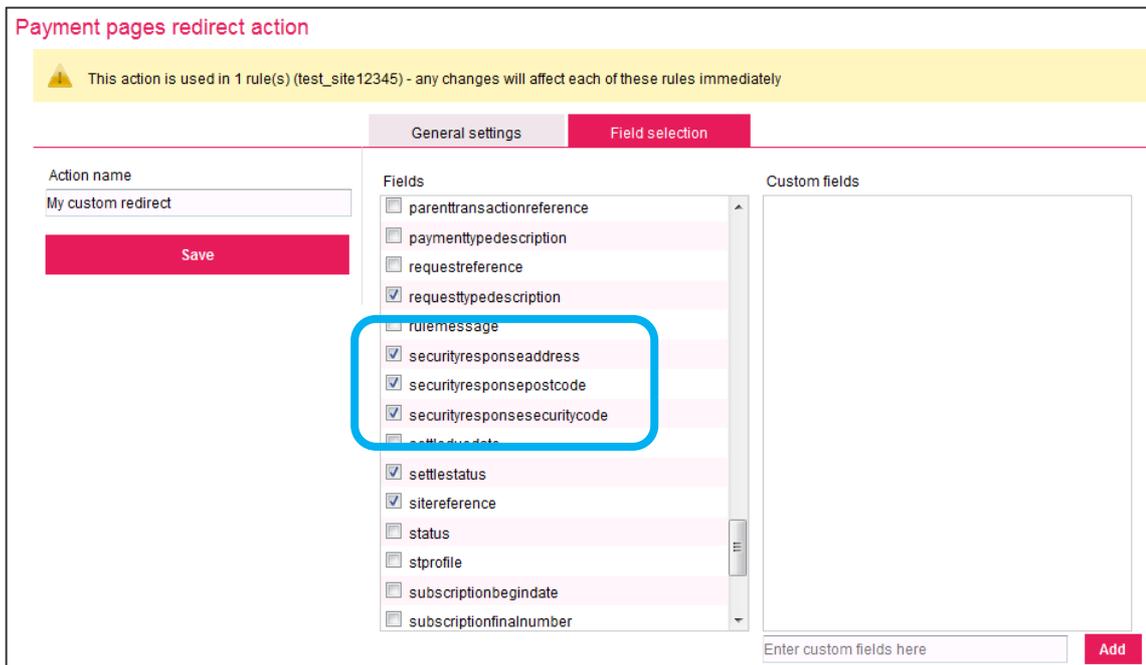
Tick the securityresponseaddress, securityresponsepostcode and securityresponsesecuritycode fields and click "**Save**".

Your redirect action will be updated to return these three fields following Payment Pages transactions meeting the associated condition. Each field returned is assigned a code representing the results of checks performed. See section 2.2 for a full list of possible response codes.

3.3.2   Configuring URL notifications

In the Rule Manager, select your site reference from the top-left, and action type "**URL notification**", and click "**Change**".

Select the notification action you would like to update and then click the "**Field selection**" tab.

Tick the securityresponseaddress, securityresponsepostcode and securityresponsesecuritycode fields and click "**Save**".

Your notification action will be updated to return these three fields following Payment Pages transactions meeting the associated condition. Each field returned is assigned a code representing the results of checks performed. See section 2.2 for a full list of possible response codes.

3.4 In the XML Response

If you are processing payments using XML Requests, you will receive the result of the AVS and security code checks within the XML Response.

> For information regarding XML Responses, please refer to the **XML Specification**.
> All Secure Trading documents can be found on our website.

The responses are included within the <**security**> tag of an XML Response.

For example, here is a simplified example of the structure of an AUTH XML Response:

```xml
<?xml version='1.0' encoding='utf-8'?>
<responseblock version="3.67">
  <requestreference>Xhj205rv2</requestreference>
  <response type="AUTH">
    <transactionreference>33-9-6</transactionreference>
    <timestamp>2015-02-27 13:43:02</timestamp>
    <acquirerresponsecode>00</acquirerresponsecode>
    …
    <error>
      <message>Ok</message>
      <code>0</code>
    </error>
    <security>
      <postcode>2</postcode>
      <securitycode>2</securitycode>
      <address>0</address>
    </security>
  </response>
</responseblock>
```

Each element within the <**security**> tag is the response code for a check performed by the customer's bank. In the example above:

// **security/postcode** is "2"
   indicating a "matched" response for the billing postcode.

// **security/securitycode** is "2"
   indicating a "matched" response for the card's security code.

// **security/address** is "0"
   indicating a "not given" response for the billing premise.

> *i* Please refer to section 2.2 for a list of response codes.

4 Acting on the Results

This section explains how to perform actions on your transactions based on the results of AVS and security code checks.

4.1 Using Security Policy

For new accounts, Secure Trading will automatically suspend transactions (update settle status to 2) where the security code check has returned a "Not matched" response. Transactions won't automatically be suspended based on the address check response. If you would like to change this behaviour, you will need to contact Support to discuss a change to your Security Policy (see section 6.1).

4.2 Using Rules

An alternative to using the security policy (see section 4.1) is to configure rules on your site reference. When enabled, the *STR-1* rule will automatically cancel transactions (update settle status to 3) when the security code entered by the customer does not match the value held on the bank's records. This feature allows you to display a "Declined" message to your customer when the customer enters an incorrect security code.

For further information on configuring rules, please refer to the **MyST Rule Manager supplement**.

> ⓘ **Please note** that when a transaction is cancelled by a rule, the error code may remain in status "0" (Ok). This would indicate that the payment was authorised by the acquiring bank, but later cancelled by Secure Trading.

4.3 About Fraud Checks

If Fraud Checks have been enabled on your site, Secure Trading will automatically increase the transaction's fraud rating if AVS or security code checks return a "Not matched" response:

Fraud Rating	
Premise is "Not matched".	Fraud rating is unchanged.
Postcode is "Not matched".	Fraud rating increases by: +1
Security code is "Not matched".	Fraud rating increases by: +2

For further information on Fraud Checks, please refer to the **Fraud Checks document**.

4.4 Using Transaction Update

There are two methods to manually update pending transactions to be suspended or cancelled:

- ⫻ Using MyST, navigate to the "**Transaction Search**" or single transaction view pages and use the "**Update**" button to change the settle status. Please refer to the **MyST User Guide** for further information.
- ⫻ Merchants using STAPI or Web Services can configure their system to submit a TRANSACTIONUPDATE XML Request. See the **Transaction Update document** for further information.

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5   Testing

The following tables list test details that can be submitted to obtain different responses from the AVS and security code checks. These details can be used with most major payment types.

> (i) **Please note** that only the billing premise, postcode and security code fields dictate the outcome of the checks performed. Entering details into the other address fields will not affect the outcome of the AVS and security code checks.

5.1   Premise

Billing Premise	Security Response	Security Response Caption
No 789	2	**Matched**
No 123	4	**Not Matched**
No 333	1	**Not Checked**
Leave blank	0	**Not Given**

5.2   Postcode / ZIP Code

UK Billing Postcode	US Billing Postcode	Security Response	Security Response Caption
TE45 6ST	55555	2	**Matched**
TE12 3ST	12345	4	**Not Matched**
TE33 3ST	33333	1	**Not Checked**
Leave blank	Leave blank	0	**Not Given**

5.3   Security code

Security Code	AMEX Security Code	Security Response	Security Response Caption
123	1234	2	**Matched**
214	2144	4	**Not Matched**
333	3333	1	**Not Checked**
Leave blank	Leave blank	0	**Not Given**

6   Further Information and Support

This section provides useful information with regards to documentation and support for your Secure Trading solution.

6.1   Secure Trading Support

If you have any questions regarding integration or maintenance of the system, please contact our support team using one of the following methods.

Method	Details
Telephone	+44 (0) 1248 672 050
Fax	+44 (0) 1248 672 099
Email	support@securetrading.com
Website	http://www.securetrading.com/support/support.html

6.2   Secure Trading Sales

If you do not have an account with Secure Trading, please contact our Sales team and they will inform you of the benefits of a Secure Trading account.

Method	Details
Telephone	0800 028 9151
Telephone (Int'l)	+44 (0) 1248 672 070
Fax	+44 (0) 1248 672 079
Email	sales@securetrading.com
Website	http://www.securetrading.com

6.3   Useful Documents

All documents regarding the STPP system can be found on Secure Trading's website (http://www.securetrading.com). Alternatively, please contact our Support team as outlined above.

6.4   Frequently Asked Questions

Please visit the FAQ section on our website (http://www.securetrading.com/support/faq).