RealScore
User Guide

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Company Information

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1   About This Guide

This section outlines the purpose and aim of the guide, target audience, any source materials or terminology used, and a general document description. Please note that this document is regarded as confidential and is for customer use only. It has been supplied under the conditions of your payment-processing contract.

1.1 Purpose

The purpose of this guide is to provide all of the details required to work with RealScore.

1.2 Audience

The target audience for this guide is users of RealScore.

1.3 Prerequisites

In order to use this guide, you should have experience with and knowledge of the following concepts:

- Knowledge of RealControl

1.4 Related Documents

In addition to this guide, you can also refer to the following documents in the Realex Payments documentation set for information about the Realauth service:

- Realcontrol User Guide

1.5 Conventions

Realex documentation uses the following conventions:

Note: Tips or advice for the user.
Caution: Important note. Potential financial impact.#

The following table outlines the main formatting conventions used in this guide:

Conventions	Description	Example
Blue Italic or Plain Type	Hyperlinks and cross-references	For more information see Table 1.n
Italics	Names of other guides	*Realauth Developer's Guide*
Courier New	Program code, screen messages, directory files, and file names	<comments></comments>
Courier New	Placeholder for element names, field values, or user input	*card_holder_name*
BOLD CAPS	Error and warning messages	**101 / REFERRAL B**

2   Introduction

2.1 What is RealScore?

RealScore is designed to assist merchants with managing fraud at the point of sale, by identifying negative data and checking each transaction for patterns in real time. RealScore is configured through Realcontrol by the merchant. It uses data entered in Realcontrol and also data sent in the transaction to carry out the checks.

Once RealScore has been set up, a score is calculated for all transactions processed by the merchants. The result of individual RealScore checks can be returned in real time along with an overall score for the transaction.

Note: Each section of RealScore must be configured on a sub-account basis. For more information on sub-accounts please see the Realauth developer's guide.

RealScore checks can be carried out in 2 ways:

- A RealScore transaction type called "TSS" can be sent to Realex to verify the fraud score before the authorisation request is sent.

- RealScore can be carried out at the time of authorisation and the result returned with the authorisation result.

Note: Transactions processed through the online terminal use this option and can be checked at time of authorisation.

There are 2 types of RealScore:

2.2 TSS

TSS calculates the RealScore based on the checks the merchant has set up in RealControl. The score is then returned in the transaction response and can also be seen in RealControl in the transaction details.

2.3 TSS with autocheck

TSS with autocheck calculates the RealScore based on the checks the merchant has set up in RealControl. If the transaction breaks the RealScore rejection rules the transaction is declined and message code 107 is displayed. These rejection rules are configured through Realcontrol and are discussed in Setting up the TSS Option.

"TSS with autocheck" option has an extra configuration section called "Config RealScore rejection rules" where the merchant configures the checks to be carried out on each transaction. If the transaction fails the check it is automatically declined and message code 107 is displayed before the transaction is sent for authorization

3 RealScore Zones and Checks

This chapter describes the following:

- RealScore Zones
- RealScore Checks

3.1 RealScore Zones

There are three RealScore zones:

- **Zone 1000 - Transaction Screening.**

The checks done in Zone 1000 compare data in the transaction against data supplied through RealControl and are specific to the merchant.

- **Zone 2000 - Data Sanity Checking.**

The checks done in Zone 2000 compare certain fields in the transaction against other fields in the transaction. e.g. Comparing the shipping country against the billing country. These checks are common to all merchants

- **Zone 3000 - Data Pattern Checking.**

The checks done in Zone 3000 compare data in a transaction against data from previous transactions.

Note: It is important to remember:

- All the checks are completed in real time and each individual check returns a score in the range 0 to 9. The score works on the basis that the higher the score the lower the risk.

- The scores are added to compute an overall RealScore.

- Each check has a weight which determines the importance of the check on the overall score.

3.2 RealScore Checks

3.2.1 Zone 1000

Below is a list of the codes used in Zone 1000. See Setting up the TSS Option for details of how the checks are configured in the transaction screening section.

Code	Title	Format	Length	Description
1000	High Risk Card number	0-9	12-19	This can be used to track and flag card numbers that have in the past led to payment difficulties. This is compared against the card number sent in the TSS and or auth request. Configured in transaction screening section
1001	High Risk Cardholder's name	a-z A-Z ""-'	0-50	This can be used to track and flag cardholder names that have in the past led to payments difficulties. This is compared against the cardholder name sent in the TSS and/or Auth request. Configured in transaction screening section.
1002	High Risk Customer Number	a-z A-Z 0-9 – ""_.,+@	0-50	This check allows merchants to track and flag a table of specific customer numbers. This is compared against the value sent in the "custnum" field in the TSS and/or Auth request. Configured in transaction screening section.
1003	High risk Variable Reference	a-z A-Z 0-9 – ""_.,+@	0-50	The variable reference can be used for values that are important to the business for example mobile number, car registration, first time buyer. This check allows merchants to track and flag these values. This is compared against the value sent in the "varref" field in the TSS and/or Auth request. Configured in transaction screening section.
1004	High Risk Shipping Area	a-z A-Z 0-9 – ""_.,+@	0-30	This check allows merchants to track and flag shipping areas. This is compared against the value sent in the shipping code field in the TSS and/or Auth request. Configured in transaction screening section
1005	High Risk shipping country	a-z A-Z 0-9 – ""_., character country code	2	This check allows merchants to track and flag shipping countries. This is compared against the value sent in the shipping code field in the TSS and/or Auth request. Configured in transaction screening section.

Code	Title	Format	Length	Description
1006	High Risk Billing Area	a-z A-Z 0-9 ""./	0-30	This check allows the merchant to track and flag billing areas. This is compared against the value sent in the billing code field of the TSS and/or Auth Request. Configured in transaction screening section.
1007	High risk Billing Country	a-z A-Z 2 character country code	2	This check allows the merchant to track and flag billing countries. This is compared against the value sent in the billing country filed in the TSS and/or Auth request. Configured in Transaction Screening Section.
1008	High Risk IP Address	0-9 IP address in X.X.X.X format	[1-3].{1-3}.{1-3}.{1-3}	This check allows the merchant to track and flag a table of specific IP numbers. This is compared against the value sent on the "custipaddress" field in the TSS and/or Auth Request. Configured in transaction screening section.
1009	High Risk Prduct ID	a-z A-Z 0-9 – ""_.,+@	0-50	This check allows the merchant to track and flag a table of specific IP numbers. This is compared against the value in the "custipaddress" field in the TSS and/or Auth request. Configured in transaction screening section.
1010	High Risk issuer country	a-z A-Z 2 character country code	2	This check allows the merchant to track and flag a table of specific card issuer countries. See Appendix A – Country Codes for the correct list of codes. Where the issuer country is not indentified XX will be returned. Use XX to score unidentified card issuing countries. Configured in transaction screening section.
1011	High Risk BIN Range	0-9	0-12	The BIN range is the first 6 digits of the card number. This check allows the merchant to track and flag BIN ranges entered in this check. This is compared with the first 6 digits of the card number in the TSS and/or Auth Request. Configured in transaction screening section.
1100	Shipping and Home Countries	N/A	N/A	This check compares the shipping country field in the TSS and/or Auth request with the home country.
1101	Billing and Home Countries	N/A	N/A	This check compares the billing country field in the TSS and/or Auth request against the home country.
1200	Maximum Ticket Size	N/A	N/A	The maximum ticket size is an upper limit on the ticket size which is configured by currency in the amount threshold section in RealControl (see section 4 setting up

Code	Title	Format	Length	Description
				amounts threshold). This check compares against a maximum ticket size against the amount in the TSS and/or Auth request.
1201	High Risk times	N/A	N/A	High Risk times can be configured in the parameter section in Realcontrol. This check compares the time of the transaction against the high risk times.

Once set up, each check will return an individual score which is used to calculate the overall score. Criteria entered for a check can have a score of between 9 and 0, where 9 is good and 0 is bad. A scale is provided in the "transaction screening" section for the majority of the 1000 checks where a score (in the range 0 - 9) can be selected. A default score for each check can also be assigned and this is used if the transaction details do not match the check criteria.

To access RealScore transaction screening:

1. Select RealScore from the main Realcontrol menu

2. Click Transaction Screening

The transaction screening screen is displayed.

To assign a RealScore value:

3. From the transaction screening section, click Add a new Value.

4. From the if drop-down list select a check and in the equals field enter the value required.

5. Select a tss score from the radio buttons provided.

6. Click **Add New RealScore Value"**.

To modify a Default Score:

If a RealScore has not been allocated to a value, a default RealScore is returned for that value. A default RealScore for each value can be set up as follows.

1. From the transaction screening section, click **Check Defaults**.
2. From the if drop-down list select the check you wish to modify.
3. If a default RealScore is already present, the score will be checked. You can add or modify this RealScore.

Note: If there is no default value specified, a code of 9 is assigned.

To search for a RealScore value:

1. From the transaction screening section, click **Search**. (This search area is displayed by default when the page is loaded initially).
2. Enter a value to search for in the text field provided.
3. From the if drop-down list select the check you wish to search.
4. Click **Search**.
5. If the search is successful, the value will be displayed along with the RealScore assigned to it. This score can then be modified or removed.
6. If the search is unsuccessful, an opportunity to add the RealScore is presented.

To download values and the RealScore assigned to them:

1. From the transaction screening section, click Download Scored Values.
2. From the if drop-down list, select the value type you wish to download.
3. Click Download.

Note: Downloads are in excel format.

Examples of Configuring Zone 1000 checks

Example 1
"Check 1010 - Issuer country" can be set up to return a low score if a specific country, for example US (UNITED STATES), is the issuing country of the card number used. The default score can be set up to return a high score for all other countries. In this way, certain countries can be set up as high risk countries.

1. Login to Realcontrol, click **RealScore**.

The transaction screening screen is displayed.

Transaction Screening
From this screen you can manage your Transaction Screening scores.

Select from the following actions:

| Search >> | Add a new Value >> | Check Defaults >> | Download Scored Values >> |

Add a new value to RealScore:

If [1010: Issuer Country ▼] equals [US]

then return a score of ⦿ ○ ○ ○ ○ ○ ○ ○ ○ ○
                      0 1 2 3 4 5 6 7 8 9

[Add New RealScore Value >>]

2. In the "transaction screening" section click Add a new Value.
3. From the If dropdown list select the check to be configured.
4. In the equals field imput the check criteria (US as per example).
5. Tick a number from 0-9 to set the failure score, where 0 is bad and 9 is good. This will be the score that's returned if the check fails. Typically 0 is ticked to return the lowest score if the check fails.
6. Click **Add New RealScore Value**.

Note: To complete setting up this check the "response values" and "weights" sections must be configured. These sections are described in Setting up the TSS Option.

Example 2

Check 1010 - Issuer country" can be reversed where a high score can be returned for a specific country, for example IE (Ireland) and UK (United Kingdom, is the issuing country of the card number used. The default score can be set to return a low score. In this way, any issuing countries other than IE and UK will be seen as high risk countries.

1. Login to Realcontrol, click on **RealScore**
2. In the "transaction screening" section **Add a new Value**.
3. From the If dropdown list select the check to be configured.
4. In the text box type the check criteria (US as per example).
5. Tick a number from 0-9 to set the passing score. This is the score that will be returned
6. if the check passes. Typically 9 is ticked to return the highest score if the check passes.

7. 5.Click **Add New RealScore Value**.

Note: To complete setting up this check the "response values" and "weights" sections must be configured. This is discussed in Setting up the TSS Option.

Zone 2000

These are checks completed by comparing the transaction data and are common to all merchants. Zone 2000 checks are configured in the "weights" and "response values" section as described in Setting up the TSS Option.

Zone 2000 Data Sanity Checking for all Merchants

Code	Title	Description
2000	Even amount check	If the amount is an even amount then this check will fail. The pass score is 9 and the fail score is 0.
2001	Shipping and Billing countries	This check compares the shipping country to the billing country from the TSS and/or Auth request. If they are the same the check will pass. This check returns a 0 for fail and 9 for pass.
2002	Card Issuer country to Shipping country	This check compares the card issuer country to the shipping country from the TSS and/or Auth request. If they are the same the check will pass. This check returns a 0 for fail and 9 for pass. If Realex do not have a record of the card issuer's country then a five is returned to signify that it is possible they could be the same. Note that this (and the next) check works with credit cards - ROI should be assumed for Laser and UK for Switch. AMEX cards will always return a five. Be sure to use a Realex supplied country codes (See Appendix A - Country codes) to avoid possible syntax or spelling issues
2003	Card issuer country to home country	This check compares the card issuer country to the merchants home country. If they are the same the check will pass. This check returns a 0 for fail and 9 for pass. If the country of card issue (the country of the bank that issued the credit card) is the same as the specified home country then a nine is returned else a zero. If we don't have the issuer country in our database then a 5 is returned. Please note that this is a credit card issuer check - Laser and Switch cards are assumed to be issued by ROI and UK institutions respectively and AMEX are not included in this check.

3.2.2 Zone 3000

Data pattern checking is completed using historical data from the merchants processed transactions. Certain parameters must be specified in the "parameters" section of RealControl which determine what data these checks use (see parameters section). These patterns are determined using transactions across all accounts unless it is specifically stated that it is account specific.

The following variables can be configured in the parameters section in RealControl:

- The number of transactions to include in the checks.
- The average deviation to allow for different amounts
- The average deviation to allow for in different time intervals

Zone 3000 Data Pattern Checking

Code	Title	Description
3000	Higher deviation from average ticket (Account Specific)	This check compares if the transaction amount is higher than a calculated average amount. The average ticket size is calculated over the previous x transactions, where x is set in the parameters section. This check fails if the current ticket is larger than a deviation of y%, where y is set in the parameters section. This check returns a 0 for fail and 9 for pass.
3001	Lower deviation from average ticket (Account Specific)	This check compares if the transaction amount is lower than a calculated average amount. The average ticket size is calculated over the previous x transactions, where x is set in the parameters section. This check fails if the current ticket is smaller than a deviation of y%, where y is set in the parameters section. This check returns a 0 for fail and 9 for pass.
3002	Mean time between transactions is reducing (Account Specific)	If the mean time between the last five transactions is smaller (by a deviation) than the mean time between the last x transactions then the check will fail. A 0 is returned for a fail and 9 is returned for pass. If the same Bank Identification Number (the first six digits of the card number - BIN) has been used in the previous 5 transactions then this check will fail. A 0 is returned for fail, 9 returned for pass.
3003	Multiple transactions for the same BIN number	If the same Bank Identification Number (the first six digits of the card number - BIN) has been used in the previous 5 transactions then this check will fail. A 0 is returned for fail, 9 returned for pass.
3004	Recurring Amount	If this is the same amount as all of the last five amounts then a zero score is returned, else a nine.
3005	Recurring Card Number	If this is the same card number as all of the last five then a zero score is returned, else a nine.
3100	Same card with different name	Using the card number this check will

Code	Title	Description
		return the following: 9 - If the card has been used with only one name (including this transaction - i.e. this is the only name that has been used with this card number.) 8 - if the card has been used with two names 7 - Three names… 1 - nine names 0 - ten or more
3101	Same card with different customer number	Using the card number this check will return the following: 9 - used with only one customer number 8 - used with two customer numbers 7 - Three… 1 - nine 0 - ten or more
3102	Same card used with different variable reference	Using the card number this check will return the following: 9 - used with only one variable reference 8 - used with two 7 - Three… 1 - nine 0 - ten or more
3200	Customer number used with different card	Using the customer number this check will return: 9 - used with only one card 8 - used with two cards 7 - used with three cards
3201	Variable reference used with different card	Using the variable reference this check will return: 9 - used with only one card 8 - used with two cards 7 - used with three cards
3202	Card Name used with different card	Using the card name this check will return: 9 - used with only one card 8 - used with two cards 7 - used with three cards
3203	VARREF used with a different card (time-based)	Using the VARREF this check will return the following: 9 - used with only one variable reference 8 - used with two 7 - used with three cards
3300	Repeat Customer	Returns a nine if there is a previous transaction with the same variable reference, customer number, card number and card name, else a zero.
3301	Card Usage in the past 24 hours	Returns a value to determine the number of times this card has been authorised in the past 24 hours. 9 - first time 8 - second time …

Code	Title	Description
		0 - tenth or more
3302	Card usage in the past week	Returns a value to determine the number of times this card has been authorised in the past week. 9 - first time 8 - second time … 0 - tenth or more`
3303	Card Usage authorisation attempted in the past 24 hours	Returns a value to determine the number of times this card has been used (authorisation attempted) in the past 24 hours. 9 - first time 8 - second time … 0 - tenth or more
3304	Card Usage authorisation attempted in the past week	Returns a value to determine the number of times this card has been used (authorisation attempted) in the past week. 9 - first time 8 - second time … 0 - tenth or more

4 Setting up Parameters, Amounts Threshold and RealScore Checks

This chapter describes the following:

- Setting up Parameters
- Setting up Amounts Threshold
- Setting up RealScore Checks

4.1 Setting up Parameters

Within the Parameters section the following parameters can be specified: Once you have entered these values you must click **save configuration**.

4.2 Setting up Amounts Threshold

Merchants may set an upper threshold on each currency that they accept. This is entered with no decimal point so for £10.00 enter 1000. If a transaction is processed that is above this threshold a lower score will be returned. Once amount thresholds have been set click **save configuration**.

Explanation of Column Titles on Batch List screen

Parameter	Description
Number of transactions to check	This parameter is used for the Zone 3000 checks. This specifies the number of transactions which will be used for comparison and to establish averages and other values. Max number of transactions to check is 90.
Amount Deviation to allow	This is the variation from the average that is allowed. If the average is 100 and the deviation above is 10% then amounts of between 90 (100 - 10%) and 110 (100 + 10%) will not cause the check to fail.
Time Deviation to allow	This is the variation from the average time between transactions that is allowed. If the average is 100 seconds and the deviation above is 10% then intervals of between 90 seconds (100 -10%) and 110 seconds (100 + 10%) will not

	cause the check to fail.
High risk times	The merchant can select the hours during which transactions that occur are considered higher risk.

Once you have entered these values you must click **save configuration**.

4.3 Setting up RealScore Checks

Setting up the TSS Option

TSS (transaction suitability scoring) is the option which allows merchants to score their transactions without declining them. This is set up as follows:

Set up in Realcontrol

As described above there are 3 types of checks - Zones 1000, 2000 and 3000. Each zone is set up as follows:

- Zone 1000 checks need to be set up in sections:
- Transaction screening, as described above in section 3.1.2 Configuring Zone 1000 checks.
    - o Weights.
    - o Response values.
- Zone 2000 checks need to be set up in sections:
    - o Weights.
    - o Response values.
- Zone 3000 checks need to be set up in sections
    - o Weights.
    - o Response values.

Setting up the Weight

Every check that is set up must have a weight. The importance of each check through can be specified using its weight, the higher the weight the more important the check. If a check has a higher weight it will have more influence on the overall score.

To set up the weight:

- Click **weights** option.
- Beside the specific check enter the weight value in the text box.
- To equally weight the checks set all weights to the same value, for example 100. To set a check to a higher importance, increase its weight.
- Click **save configuration**.

The overall transaction score that will be returned for the weights that have just been set can be tested. This is only for testing purposes to show the score that a transaction will receive in certain scenarios.

This is done by using the tick boxes at the left side of the RealScore check and the "test" option at the bottom of the weights section. Clicking the tick box to the left of a check will signify that the check has failed.

Example scenarios that can be checked are as follows:

Click on test button without any checks ticked. This shows the score received if all checks pass which is 100.

Tick the check box beside one of the checks. Click on the test option, this shows the score received if this check fails.

Setting up the response values

Every check that is set up must be ticked in response values. Once the check is ticked in this section its score will be returned in the transaction response and will also be displayed in the transaction details in RealControl.

To enable the response value:

1. Click the tick box at the start of the checks that will be set up.
2. Click **save configuration**.

Setting up the TSS with Autocheck Option

TSS with autocheck is set up in the same way as the tss option described above except rejection rules are configured to define when the transaction should be rejected. RealScore rejection is a method by which transactions can be automatically rejected based on the result of the RealScore. This provides the facility to automatically decline suspect transactions. These transactions would have been authorised if they had been sent to the bank so **please ensure that all RealScore settings are configured correctly before adding rejection rules**

Set up in RealControl

Follow all the steps as described in setting up parameters and additionally configure the rejection rules as follows:

Setting up RealScore rejection rules

Within the section "Config RealScore rejection rules" the merchant can specify a transaction to reject if it breaks a certain rule. A transaction can be rejected if the overall score is less than a specified threshold. Transactions can also be rejected if a specific check receives a specified score.

Reject based on the overall score

Setting up RealScore to reject on the overall score is unique to each merchant. How the overall score is calculated depends on the number of checks set up and their weights (see calculating the RealScore). Please note, to set this up accurately you need to understand the scores that will be returned in certain scenarios and based on your risk appetite you can judge what you want the overall score threshold to be. The overall score can be up to 100

To reject a transaction that has a lower score than the overall score threshold:

1. Click **Config RealScore rejection rules** in the RealScore section.
2. At the top of the screen the first rule is for the overall RealScore. Tick the check box at the start of this rule.
3. In the text box enter the overall score to set as the threshold. This means that if the overall score is lower than this threshold then the transaction will be rejected.
4. Click **Save Configuration**.The Transaction Process

Reject based on a specific check

Within the "Config RealScore rejection rules" a rejection rule can be set up for each check. Again to set this up accurately you need to understand the scores that will be returned in certain scenarios for each check and based on your risk appetite you can judge what you want the check threshold to be. The check score can be between 0 - 9.

To reject a transaction that fails an individual check threshold:
- Click **Config RealScore rejection rules** in the RealScore section
- Tick the check box at the start of the rule to be set up
- In the drop down list choose the operator to use. Normally "<" or "=" is used.
- In the text box enter the score to set as the threshold. This means that if the check returns a lower score than this threshold then the transaction will be rejected.
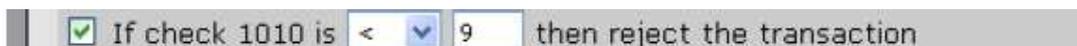
Example of Full RealScore Check with Rejection Rule

An example of setting up a RealScore check with a rejection rule is outlined below.

The merchant only wants to accept transactions from Irish issued cards as they can only ship products within Ireland. They want to decline transactions where the card is issued in any other country.

Setting up Transaction Screening

1. From "Transaction Screening" click **Add a new Value**. From the RealScore Check ID dropdown list and choose "1010: Issuer Country".
2. In the test box, type in the country code IE for Ireland (see Appendix A for countrycode list). Tick option 9 and then click **add**. This means that if IE is the issuing country then a score of 9 is returned.
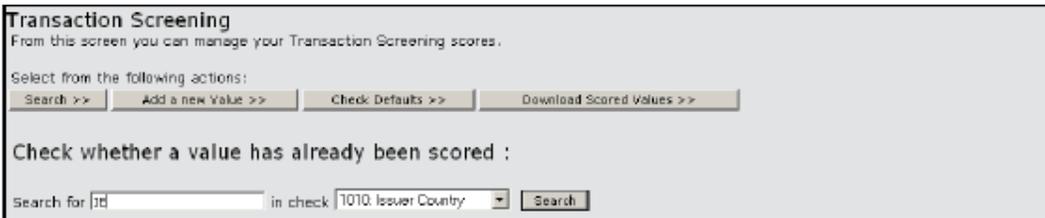
Setting up the weight

A weight must be set for all checks that will be used.

Set the weight of check "1010 High risk issuer country". This corresponds to the check set up in Transaction Screening, see Setting up the weight.

Setting up the response value

Response values must be set for all checks that will be used.

Enable the tick box beside check "1010 High risk issuer country". This corresponds to the check set up in Transaction Screening, see section 4.1.2.2 Setting up the response values.

Setting up the rejection rule

In "Config RealScore rejection rules", tick the check box for Check: 1010 Issuer Country and fill in the value < 9 as below.
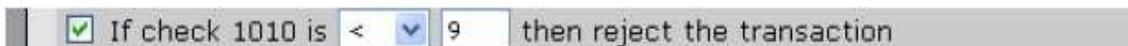
A rejection rule has now been set up so that any transactions which return a score of less than 9 will fail and will be rejected. As every country other than IE will return a 0 for this check, all countries except IE will be rejected with a result code of 107.

5 Calculating the RealScore

This chapter describes the following:

- Calculating the RealScore

5.1 Calculating the RealScore

The overall score is made up of the individual scores summed together. The score for each check is calculated using the following formula:

$$\frac{(N+1) * weight}{Total\ weight} \Big\} *$$

Where:

N = the checks result

Weight = the checks weight

Total weight = All weights summed

5.2 Examples

5.2.1 Scenario 1

Only 1 check is set up, Check 1010 is set up to return a 9 if it passes and 0 if it fails. It is weighted at 100.

If the check passes, the score will be:

Check 1010 calculation

$$\frac{[(9+1) * 100] * 10}{100}$$

$$= \frac{[1000] * 10}{100}$$

$$= 100$$

Overall score

$=$ 100

If the check fails, the score will be:

Check 1010 calculation

$$\frac{[(0+1) * 100] * 10}{100}$$

$$= \frac{[100] * 10}{100}$$

$$= 10$$

Overall score

$=$ 10

5.2.2 Scenario 2

2 checks are set up with equal weights - check 1010 is set up to return a 9 if it passes and 4 if it fails. Check 1200 is set up to return a 9 if it passes and 0 if it fails. Both have a weight of 100.

If the check 1010 passes and check 1200, passes the score will be:

Check 1010 calculation

$$\frac{[(9+1) * 100] * 10}{200}$$

$$= \frac{[1000] * 10}{200}$$

$$= 50$$

$+$

Check 1200 calculation

$$\frac{[(9+1) * 100] * 10}{200}$$

$$= \frac{[1000] * 10}{200}$$

$$= 50$$

$=$

Overall score

$= 50+50 = 100$

If the check 1010 passes and check 1200 fails, the score will be:

Check 1010 calculation	Check 1200 calculation	Overall score
$\frac{[(9+1) * 100] *10}{200}$	$\frac{[(0+1) * 100] *10}{200}$	
$= \frac{[1000] *10}{200}$	$= \frac{[100] *10}{200}$	
$=$ 50	$=$ 5	$= 50+5 = 55$

If the check 1010 fails and check 1200 passes, the score will be:

Check 1010 calculation	Check 1200 calculation	Overall score
$\frac{[(4+1) * 100] *10}{200}$	$\frac{[(9+1) * 100] *10}{200}$	
$= \frac{[500] *10}{200}$	$= \frac{[1000] *10}{200}$	
$=$ 25	$=$ 50	$= 25+50 = 75$

If the check 1010 fails and check 1200 fails, the score will be:

Check 1010 calculation	Check 1200 calculation	Overall score
$\frac{[(4+1) * 100] *10}{200}$	$\frac{[(0+1) * 100] *10}{200}$	
$= \frac{[500] *10}{200}$	$= \frac{[100] *10}{200}$	
$=$ 25	$=$ 5	$= 25+5 = 30$

5.2.3 Scenario 3

2 checks are set up with different weights- check 1010 is set up to return a 9 if it passes and 4 if it fails and has a weight of 75. Check 1200 is set up to return a 9 if it passes and 0 if it fails and has a weight of 25.

If the check 1010 passes and check 1200 passes, the score will be:

Check 1010 calculation		Check 1200 calculation		Overall score
$\dfrac{[(9+1) * 75] *10}{100}$		$\dfrac{[(9+1) * 25] *10}{100}$		
$= \dfrac{[750] *10}{100}$	+	$= \dfrac{[250] *10}{100}$	=	
$=\ \ \ \ 75$		$=\ \ \ \ 25$		$= 75+25 = 100$

If the check 1010 passes and check 1200 fails, the score will be:

Check 1010 calculation	Check 1200 calculation	Overall score
$\dfrac{[(9+1) * 75] *10}{100}$	$\dfrac{[(0+1) * 25] *10}{100}$	
$= \dfrac{[750] *10}{100}$	$= \dfrac{[25] *10}{100}$	
$=\ \ \ \ 75$	$=\ \ \ \ 2.5$	$= 75+2.5 = 77.5$

If the check 1010 fails and check 1200 passes, the score will be:

Check 1010 calculation	Check 1200 calculation	Overall score
$\dfrac{[(4+1) * 75] *10}{100}$	$\dfrac{[(9+1) * 25] *10}{100}$	
$= \dfrac{[375] *10}{100}$	$= \dfrac{[250] *10}{100}$	
$=\ \ \ \ 37.5$	$=\ \ \ \ 25$	$= 37.5+25 = 62.5$

If the check 1010 fails and check 1200 fails, the score will be:

Check 1010 calculation	Check 1200 calculation	Overall score
$\dfrac{[(4+1) * 75] *10}{100}$	$\dfrac{[(0+1) * 25] *10}{100}$	
$= \dfrac{[375] *10}{100}$	$= \dfrac{[25] *10}{100}$	
$=\ \ \ \ 37.5$	$=\ \ \ \ 2.5$	$= 37.5+2.5 = 40$

6   Appendix A - Country Codes

This chapter describes the following:

Country Codes Required for RealScore Checks

Certain RealScore checks require submission of the country code. To ensure that the country names we use are the same, Realex Payments use the following ISO 3166-1 country codes. The common use of these is in a dropdown list from which the customer can select their billing and shipping countries. The HTML needed to create a dropdown list consisting of these values is available from Realex Payments. The displayed Country Name and the order of the names displayed can be changed as long as the country code sent to Realex Payments is kept the same as the list below.

Note: To use the United Kingdom in a check, both country codes (GB and UK) will need to be used. Also the issuing country may not be identified in the response message. Where the issuer country is not identified XX will be returned. Use XX to score unidentified card issuer country transactions.

Country Codes Required for RealScore Checks

code	country name	code	country name
AD	ANDORRA	BY	BELARUS
AE	UNITED ARAB EMIRATES	BZ	BELIZE
AF	AFGHANISTAN	CA	CANADA
AG	ANTIGUA AND BARBUDA	CC	COCOS (KEELING) ISLANDS
AI	ANGUILLA	CD	CONGO, THE DEMOCRATIC REPUBLIC OF THE
AL	ALBANIA	CF	CENTRAL AFRICAN REPUBLIC
AM	ARMENIA	CG	CONGO
AN	NETHERLANDS ANTILLES	CH	SWITZERLAND
AO	ANGOLA	CI	COTE D'IVOIRE
AQ	ANTARCTICA	CK	COOK ISLANDS
AR	ARGENTINA	CL	CHILE
AS	AMERICAN SAMOA	CM	CAMEROON
AT	AUSTRIA	CN	CHINA
AU	AUSTRALIA	CO	COLOMBIA
AW	ARUBA	CR	COSTA RICA
AZ	AZERBAIJAN	CU	CUBA
BA	BOSNIA AND HERZEGOVINA	CV	CAPE VERDE
BB	BARBADOS	CX	CHRISTMAS ISLAND
BD	BANGLADESH	CY	CYPRUS
BE	BELGIUM	CZ	CZECH REPUBLIC
BF	BURKINA FASO	DE	GERMANY
BG	BULGARIA	DJ	DJIBOUTI
BH	BAHRAIN	DK	DENMARK
BI	BURUNDI	DM	DOMINICA
BJ	BENIN	DO	DOMINICAN REPUBLIC
BM	BERMUDA	DZ	ALGERIA
BN	BRUNEI DARUSSALAM	EC	ECUADOR
BO	BOLIVIA	EE	ESTONIA
BR	BRAZIL	EG	EGYPT
BS	BAHAMAS	EH	WESTERN SAHARA
BT	BHUTAN	ER	ERITREA
BV	BOUVET ISLAND	ES	SPAIN
BW	BOTSWANA	ET	ETHIOPIA

code	country name	code	country name
FI	FINLAND	KZ	KAZAKSTAN
FJ	FIJI	LA	LAO PEOPLE'S DEMOCRATIC REPUBLIC
FK	FALKLAND ISLANDS (MALVINAS)	LB	LEBANON
FM	MICRONESIA, FEDERATED STATES OF	LC	SAINT LUCIA
FO	FAROE ISLANDS	LI	LIECHTENSTEIN
FR	FRANCE	LK	SRI LANKA
GA	GABON	LR	LIBERIA
GB	UNITED KINGDOM	LS	LESOTHO
GD	GRENADA	LT	LITHUANIA
GE	GEORGIA	LU	LUXEMBOURG
GF	FRENCH GUIANA	LV	LATVIA
GH	GHANA	LY	LIBYAN ARAB JAMAHIRIYA
GI	GIBRALTAR	MA	MOROCCO
GL	GREENLAND	MC	MONACO
GM	GAMBIA	MD	MOLDOVA, REPUBLIC OF
GN	GUINEA	MG	MADAGASCAR
GP	GUADELOUPE	MH	MARSHALL ISLANDS
GQ	EQUATORIAL GUINEA	MK	MACEDONIA, THE FORMER YUGOSLAV REPUBLIC OF
GR	GREECE		
GS	SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS	ML	MALI
GT	GUATEMALA	MM	MYANMAR
GU	GUAM	MN	MONGOLIA
GW	GUINEA-BISSAU	MO	MACAU
GY	GUYANA	MP	NORTHERN MARIANA ISLANDS
HK	HONG KONG	MQ	MARTINIQUE
HM	HEARD ISLAND AND MCDONALD ISLANDS	MR	MAURITANIA
HN	HONDURAS	MS	MONTSERRAT
HR	CROATIA	MT	MALTA
HT	HAITI	MU	MAURITIUS
HU	HUNGARY	MV	MALDIVES
ID	INDONESIA	MW	MALAWI
IE	IRELAND	MX	MEXICO
IL	ISRAEL	MY	MALAYSIA
IN	INDIA	MZ	MOZAMBIQUE
IO	BRITISH INDIAN OCEAN TERRITORY	NA	NAMIBIA
IQ	IRAQ	NC	NEW CALEDONIA
IR	IRAN, ISLAMIC REPUBLIC OF	NE	NIGER
IS	ICELAND	NF	NORFOLK ISLAND
IT	ITALY	NG	NIGERIA
JM	JAMAICA	NI	NICARAGUA
JO	JORDAN	NL	NETHERLANDS
JP	JAPAN	NO	NORWAY
KE	KENYA	NP	NEPAL
KG	KYRGYZSTAN	NR	NAURU
KH	CAMBODIA	NU	NIUE
KI	KIRIBATI	NZ	NEW ZEALAND
KM	COMOROS	OM	OMAN
KN	SAINT KITTS AND NEVIS	PA	PANAMA
KP	KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF	PE	PERU
KR	KOREA, REPUBLIC OF	PF	FRENCH POLYNESIA
KW	KUWAIT	PG	PAPUA NEW GUINEA
KY	CAYMAN ISLANDS	PH	PHILIPPINES
		PK	PAKISTAN

code	country name
PL	POLAND
PM	SAINT PIERRE AND MIQUELON
PN	PITCAIRN
PR	PUERTO RICO
PS	PALESTINIAN TERRITORY, OCCUPIED
PT	PORTUGAL
PW	PALAU
PY	PARAGUAY
QA	QATAR
RE	REUNION
RO	ROMANIA
RU	RUSSIAN FEDERATION
RW	RWANDA
SA	SAUDI ARABIA
SB	SOLOMON ISLANDS
SC	SEYCHELLES
SD	SUDAN
SE	SWEDEN
SG	SINGAPORE
SH	SAINT HELENA
SI	SLOVENIA
SJ	SVALBARD AND JAN MAYEN
SK	SLOVAKIA
SL	SIERRA LEONE
SM	SAN MARINO
SN	SENEGAL
SO	SOMALIA
SR	SURINAME
ST	SAO TOME AND PRINCIPE
SV	EL SALVADOR
SY	SYRIAN ARAB REPUBLIC
SZ	SWAZILAND
TC	TURKS AND CAICOS ISLANDS
TD	CHAD
TF	FRENCH SOUTHERN TERRITORIES

code	country name
TG	TOGO
TH	THAILAND
TJ	TAJIKISTAN
TK	TOKELAU
TM	TURKMENISTAN
TN	TUNISIA
TO	TONGA
TP	EAST TIMOR
TR	TURKEY
TT	TRINIDAD AND TOBAGO
TV	TUVALU
TW	TAIWAN, PROVINCE OF CHINA
TZ	TANZANIA, UNITED REPUBLIC OF
UA	UKRAINE
UG	UGANDA
UM	UNITED STATES MINOR OUTLYING ISLANDS
US	UNITED STATES
UY	URUGUAY
UZ	UZBEKISTAN
VA	HOLY SEE (VATICAN CITY STATE)
VC	SAINT VINCENT AND THE GRENADINES
VE	VENEZUELA
VG	VIRGIN ISLANDS, BRITISH
VI	VIRGIN ISLANDS, U.S.
VN	VIET NAM
VU	VANUATU
WF	WALLIS AND FUTUNA
WS	SAMOA
YE	YEMEN
YT	MAYOTTE
YU	YUGOSLAVIA
ZA	SOUTH AFRICA
ZM	ZAMBIA
ZW	ZIMBABWE

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