



Custom Digital Onboarding

Quality Assurance and User Acceptance

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CONFIDENTIAL

Instant Account (Holder) Verification Service (AVS-R) |



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Content

Content	3
1. Revision History	4
2. Introduction	5
3. Restful Web Service Description	5
4. Data Validation	5
4.1 Object validation	6
4.2 Check Digit Validation	6
5. Restful Request and Response Element Descriptions.....	6
6. Input Message	6
6.1 Authentication.....	6
6.2 Web Service Request.....	7
6.3 Sample Message.....	9
7. Output Message	9
7.1 Message call status.....	9
7.2 Web Service Response	10
7.3 Sample Response Acknowledgement	13
7.4 Sample Failure Response	14
8. Message Code	15
9. Message Call Status error.....	16
10. Http Codes	17

1. Revision History

Date of change	Version	Summary of changes	Author
2017 - 11 - 24	1. 0. 0	New Integration document	
2018 - 02 - 01	1. 0. 1	<ul style="list-style-type: none"> Added Search Query Option Modified Authorisation – token generation 	pbVerify Dev
2018 - 03 - 20	1. 0. 2	<ul style="list-style-type: none"> Included Expected Header parameters Revised Asynchronous response message sample 	pbVerify Dev
2018 - 06 - 10	1. 0. 3	<ul style="list-style-type: none"> Included Account Type Verification Results. Return submitted account Type on Asynchronous response Include CDV error codes Http Status error codes 	pbVerify Dev
2018 - 09 - 03	1. 0. 4	<ul style="list-style-type: none"> Removed “Accept-<i>Encoding</i>” on both request and asynchronous response 	pbVerify Dev

2. Introduction

pbVerify's Account (Holder) Verification Service (AVS) provides a RESTful Web Service through which a bank account number and Identity Number (ID) or Company registration number are verified.

This document will serve as a guide to improve the implementation process between pbVerify and its clients.

PLEASE NOTE:

ALL REQUESTS SUBMITTED THROUGH THE PRODUCTION SERVICE ARE SUBMITTED TO THE BANK AND USAGE WILL ATTRACT COSTS.

The pbVerify Production environment (url: www.veriid.com/PBVerify/webservice/) allows Clients to integrate with the Live system and process real data through to the issuing banks. Please confirm access and pricing before integration. Any technical queries must be logged with dev.support@pbverify.co.za.

3. Restful Web Service Description

The AVS Web Service will allow Clients to integrate using the JSON (Java Script Object Notation) Request Object. A response will be generated as a JSON Response Object.

The AVS Web Service supports both Synchronous and Asynchronous processing in case of a synchronous processing timeout.

This service functions in two parts:

1. The first part is asynchronous call. This will respond with the verification result if received from the bank within the timeout period of 20 seconds. (Refer to Request and Response elements below)
2. The second part is an asynchronous post to the Client endpoint. The asynchronous message will always be provided if the bank does not respond within the timeout period. (*Refer to "Asynchronous Processing" section 8*)

4. Data Validation

The AVS Web Service performs two forms of data validation on each web service call, namely the Data Objects validation and Check Digit Validation.

4.1 Object validation

The Data Object validation examines the validity of each object based on the specification layout. If any tags within the Request object fails validation, PbVerify web service will respond asynchronously with an error message. (See *Message Call Status Errors: section 12*) The following information is validated and can yield a response failure message.

- Mandatory fields
- Message Contract definition
- Data Types: Length and Type

4.2 Check Digit Validation

This is an optional service offering and clients must inform PbVerify if they wish to avail of the service option.

The Check Digit Validation (CDV) validates that all transactions submitted to the bank have the correct branch code, account number and account type combination. On each web service call, the AVS system performs an upfront CDV, any transactions that fail this validation will be sent back synchronously to the requesting system, with an error code in the “message Code” tag and the validation error message in the “message Description” tag. (See *CDV error codes: section 11*).

5. Restful Request and Response Element Descriptions

The AVS Web Service elements are made up as follows:

1. Request Object
2. Response Object

These objects are aligned with industry standards. A description of each element for the request and response objects are described below.

The PbVerify REST service headers are configured with the following parameters:

Content-Type: application/json

6. Input Message

6.1 Authentication

AVS restful Web Service authentication is based on API Keys. At the time of implementation, the Client will receive an Memberkey and a password.

To generate a request token, a combination of the following values is required in the specific order detailed below:

1. Memberkey object.
2. Password object.
3. The entire Request Data body including tags.

Once concatenated, the data must be encoded using UTF- 8 and hashed using HMAC- SHA 256 with the **Secret Key** provided by PbVerify.

Parameter	Object	Mandatory	Description
1	memberkey	Yes	Used to look- up Client at pbVerify
2	password	Yes	Generated by Client, used by PbVerify to authenticate the Client. This must always be upper case.

6.2 Web Service Request

Note: All objects (Tags) need to be included in the JSON message, but all the non- mandatory objects may be left blank. **(Include no white spaces as the hash calculation will fail and remember that these are “form-data” type objects)**

Parameter	Object	Type	Mandatory	Length	Description
1	memberkey	Alpha Numeric	Yes	10	Account number to be verified
2	password	Numeri, Right justified Zero filled	Yes	13	Unique password for the account number
3	bvs_details[accountType]	Numeri, right justifie, zero filled	No	2	Account type: 01 - current / cheque account 02 - savings account 03 - transmission account 04 - bond account 06 - subscription share
4	bvs_details[accountNumber]	Numeric, Right justified Zero filled	Yes	13	Account number to be verified

5	bvs_details[branchCode]	Numeric, Right justified Zero filled	Yes	6	The branch code where the account number is held
6	bvs_details[idNumber]	Alpha Numeric Left justified	Yes	13	<p>The ID number field can accept the following parameters:</p> <ul style="list-style-type: none"> Valid South African ID Number. Valid Passport Number. Valid Company Registration Number. On Company Reg Number, remove all the “\” or “/” Valid Estate Number
7	bvs_details[initial]	Alpha- Numeric, left justified	No	5	<p>A private individual’ s initials</p> <ul style="list-style-type: none"> Upper case Optional field, can be left blank.
8	bvs_details[lastname]	Alpha- Numeric, left justified	No	60	<p>This can be:</p> <ul style="list-style-type: none"> Surname of a private individual. Company name. Estate name, corresponding to the value supplied in the ID number field Upper case Optional field, can be left blank
9	bvs_details[phoneNumber]	Alpha- Numeric, left justified	No	15	<p>Cell number to be verified as supplied by Client</p> <ul style="list-style-type: none"> Optional field, can be left blank Cell number needs to be formatted as follows: “270812345678 ”
10	bvs_details[emailAddress]	Alpha- Numeric, left justified	No	100	<p>Email address to be verified as supplied by Client</p> <ul style="list-style-type: none"> Optional field, can be left blank
11	bvs_details[yourReference]	Alpha Numeric	No	20	A reference provided by the Client to identify the transaction on the Client’ s LOB system.

6.3 Sample Message

```
{
  "Status": "Success",
  "Message": "00000 Successful",
  "jobID": "33232683"
}
```

7. Output Message

On each successful message submission, a synchronous acknowledgement will be sent back to the Client. On receipt of the request sent to the sponsoring bank an asynchronous message will be generated back to the Clients' line of business as per Section 7.1 and 7.2.

The first part is asynchronous call. This will respond with the verification result if received from the bank within the timeout period of 20 seconds. (Refer to Request and Response Elements below)

Synchronous acknowledgment messages will have a message code and a corresponding message description. (see *Message code list: section 10* and *CDV error codes: section 11*)

Note: A synchronous response message with a message code "00000" or "00001" will result in an asynchronous message being sent to the Client's endpoint. PbVerify system expects a http 200 ok as a form of acknowledgement.

7.1 Message call status

The message call status is generated when PbVerify receives a Web Service call.

If the Client is successfully authenticated, this will return a True status on the Success Object. This Object is also used to provide the Client with errors in the construction of the Request Element, including the Object validation errors if there are any.

Parameter	Object	Description
1	success	Indicator of a successful or unsuccessful message call. Value in this field can be one of the following: <ul style="list-style-type: none">• True• False
2	errmsg	This is the full error message, should the message call not be successful. (Refer to the section 12)

7.2 Web Service Response

Should you wish to receive more data from the response message please send the “memberkey”, “password” and “jobId” to the “/pbverify-bank-account-verification-job-status-v3” endpoint to receive the detailed objects below.

Parameter	Object	Type	Length	Description
1	operator	Alpha Numeric	10	Person or System name that is performing the request on the Client's Line of Business (LOB)
2	accountNumber	Numeric, Right justified Zero filled	13	Account number to be verified
3	accountType	Numeric, right justified, zero filled	2	Account type: 01 - current / cheque account 02 - savings account 03 - transmission account 04 - bond account 06 - subscription share 00 - if this is not known
4	branch Code	Numeric, Right justified Zero filled	6	The branch code where the account number is held
5	idNumber	Alpha Numeric Left justified	13	The ID number field can accept the following parameters: <ul style="list-style-type: none"> Valid South African ID Number. Valid Passport Number. Valid Company Registration Number. <ul style="list-style-type: none"> On Company Reg Number, remove all the “\” or “/” Valid Estate Number
6	initials	Alpha-Numeric, left justified	5	A private individual's initials <ul style="list-style-type: none"> Upper case Optional field, can be left blank.

7	last Name	Alpha-Numeric, left justified	60	<p>This can be:</p> <ul style="list-style-type: none"> • Surname of a private individual. • Company name. • Estate name, <p>corresponding to the value supplied in the ID number field</p> <ul style="list-style-type: none"> • Upper case • Optional field, can be left blank
8	phoneNumber	Alpha-Numeric, left justified	15	<p>Cell number to be verified as supplied by Client</p> <ul style="list-style-type: none"> • Optional field, can be left blank • Cell number needs to be formatted as follows: "270812345678 "
9	emailAddress	Alpha-Numeric, left justified	100	<p>Email address to be verified as supplied by Client</p> <ul style="list-style-type: none"> • Optional field, can be left blank
10	userReference	Alpha Numeric	20	<p>A reference provided by the Client to identify the transaction on the Client' s LOB system</p>
11	accountExists	Alpha-Numeric, left justified	2	<p>The Account exists at the institution</p> <ul style="list-style-type: none"> • 00 – Positive Match • 01 – Negative Match • 99 – Unable to verify
12	accountIdMatch	Alpha-Numeric, left justified	2	<p>Identifying Number used to open the account at the relevant bank Response Parameter</p> <ul style="list-style-type: none"> • 00 – Positive Match • 01 – Negative Match • 99 – Unable to verify
13	initialMatch	Alpha-Numeric, left justified	2	<p>Response field for the private Individual' s Initials as captured on the account at the relevant bank</p> <ul style="list-style-type: none"> • 00 – Positive Match • 01 – Negative Match • 99 – Unable to verify
14	lastName Match	Alpha-Numeric, left justified	2	<p>The Lastname matches the nominated account</p> <ul style="list-style-type: none"> • 00 – Positive Match • 01 – Negative Match • 99 – Unable to verify
15	account Open	Alpha-Numeric, left justified	2	<p>Account in Active state?</p> <ul style="list-style-type: none"> • 00 – Positive Match • 01 – Negative Match • 99 – Unable to verify

16	accountAcceptsCredits	Alpha-Numeric, left justified	2	The Account accepts Credits <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
17	accountAcceptsDebits	Alpha-Numeric, left justified	2	The Account accepts Debits <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
18	accountOpenGt Three Months	Alpha-Numeric, left justified	2	Period account Active greater than 3 Months? <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
19	phoneValid	Alpha-Numeric, left justified	2	The Cellphone number provided matches the Account <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
20	emailValid	Alpha-Numeric, left justified	2	The Email address matches the account <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
21	Account TypeValid	Alpha-Numeric, left justified	2	Is the account type provided valid for specific account? <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
22	transaction Reference	Numeric	30	Unique transaction ID created by PbVerify
23	message Code	Alpha Numeric	10	Code for Response Status (<i>Refer to section 10 and 11</i>)
24	messageDescription	Alpha numeric	100	Human readable message of Response Code

7.3 Sample Response Acknowledgement

```
{
  "Status": "Success",
  "Message": "",
  "AVS": {
    "operator": "MEMBERKEY",
    "accountNumber": "62373088888",
    "accountType": "01",
    "branchCode": "250648",
    "idNumber": "7905015888888",
    "initials": "J",
    "lastName": "Goofy",
    "phoneNumber": "",
    "emailAddress": "",
    "userReference": "Testing",
    "accountExists": "00",
    "accountIdMatch": "00",
    "initialMatch": "00",
    "lastNameMatch": "00",
    "accountOpen": "00",
    "accountAcceptsCredits": "",
    "accountAcceptsDebits": "00",
    "accountOpenGtThreeMonths": "00",
    "phoneValid": "00",
    "emailValid": "99",
    "accountTypeValid": "00",
    "transactionReference": "934826",
    "captureDate": "2020-10-07-06.42.24.935000"
  }
}
```

7.4 Sample Response Message

```
"success": true
"errmsg": 0001 Transaction sent to the bank. Waiting for feedback
"count": 1,
"Response":
{
  "operator": "pbVerify QA",
  "accountNumber": "0062001884784"
  "accountType": "01"
  "branchCode": "2050655"
  "idNumber" : "7509025133086",
  "initials" : "7509025133086",
  "lastName" : "Patel"
  "phoneNumber" : 270721231231",
  "emailaddress" : support@pbsa.co.za.co.za",
  "userReference" : AVS001",
  "accountExists" : "",
  "accountIDMatch" : "",
  "initialMatch" : "",
  "lastNameMatch" : "",
  "accountOpen" : "<
  "accountAcceptsCredits" : "",
  "accountOpenGtThreeMonths" : "",
  "phoneValid" : "",
  "emailValid" : "",
  "accountTypeValid" : "",
  "transactionReference" : "2334493"
  "messageCode" : "0001",
  "messageDescription" : "Transaction sent to the bank. Waiting for feedback
```

7.5 Sample Failure Response

Note: All message with success: **“false”** will return a Http Status Code 400 and will not include the response body.

```
{
  "success": false,
  "errmsg": "Invalid ID/Company number",
  "count": 0
}
```

8. Asynchronous Processing

8.1 Response message

The response message from the Asynchronous processing have the same “Web Service Response” data elements . This message when returned in the POST back to an end- point address will not contain the Message Call Status as PbVerify will be making the call in this case.

8.2 Sample Asynchronous Response message

pbVerify keeps a record of the Clients endpoint which is required during the implementation process. The pbVerify Asynchronous process makes use of this endpoint when returning the Asynchronous JSON responses.

The Client endpoint should expose a service which accepts JSON data in a **HTTP POST**.

pbVerify expects a **http status code 200** ok, to confirm that the message was received successfully.

The following headers need to be configured, to allow the PbVerify Asynchronous process to POST to the provided endpoint:

Content- Type: application/ json

```
"success": true
"errmsg": 0001 Transaction sent to the bank. Wiating for feedback
"count": 1,
"Response":
{
  "operator": "pbVerify QA",
  "accountNumber": "0062001884784"
  "accountType": "01"
  "branchCode": "2050655"
  "idNumber" : "7509025133086",
  "initials" : "7509025133086",
  "lastName" : "Patel"
  "phoneNumber" : 270721231231",
  "emailaddress" : kpatel@hyphen.co.za",
  "userReference" : AVS001",
  "accountExists" : "",
  "accountIDMatch" : "",
  "initialMatch" : "",
  "lastNameMatch" : "",
  "accountOpen" : "<
  "accountAcceptsCredits" : "",
  "accountOpenGtThreeMonths" : "",
  "phoneValid" : "",
  "emailValid" : "",
  "accountTypeValid" : "",
  "transactionReference" : "2334493"
  "messageCode" : "0001",
  "messageDescreipton" : "Transaction sent to the bank. Waiting for feedback
```

8.3 Authentication

If Required, PbVerify supports basic HTTP authentication over SSL. By default, PbVerify's Asynchronous processing will send through the payload without authentication on an endpoint, but should there be a need, the Client would need to supply the username and password for Authentication purposes.

9. Web Service Search

The search method allows the Client to look up any transactions previously processed by PbVerify, using the PbVerify Reference that the system returned during the response process. It returns an array of transactions. (This is purely to cater for future enhancements.)

9.1 Authentication

AVS restful Web Service authentication is based on API Keys. At the time of Client implementation, the Client will receive an Access Key and a Secret Key, which is used in combination with the Request data to generate the Request Token.

To generate a request token, a combination of the following values is required in the specific order detailed below: AccessKey followed by whitespace

1. Date (formatted as: YYYY-MM-DD) followed by whitespace
2. Time (formatted as: HH:mm:ss.SSS) followed by whitespace
3. The entire RequestData body including tags.

Example:

AIDV37WBPG 2018-02-08 11:53:42.776 "RequestData":{"transactionReference":"7240"}

Once concatenated, the data must be encoded using UTF-8 and hashed using HMAC-SHA256 with the **Secret Key** provided by pbVerify.

Parameter	Object	Mandatory	Description
1	Access Key	Yes	Used to look-up Client at PbVerify
2	Request Token	Yes	Generated by Client, used by PbVerify to authenticate the Client. This must always be upper case.
3	RequestDateTime	Yes	The datetime stamp when the request is generated. This should be the same as that used when generating the Request Token Formatted as follows: YYYY-MM-DD HH:mm:ss.SSS

9.2 Search Fields

Parameter	Object	Type	Mandatory	Length	Description
1	transaction Reference	Numeric	Yes	30	Unique transaction ID created by PbVerify

9.3 Sample Request Message

```
{
  "Authorisation":
  {
    "AccessKey": "ACTF3IUZFI",
    "RequestToken": "32920F1BFD00B7F3A64882316FD2E23D248B9856985D5A2DF11D139F3E78911E",
    "RequestDateTime": "2018-06-27 23:17:41.532"
  },
  "RequestData": {
    "transactionReference": "3010195"
  }
}
```

9.4 Response Fields

Parameter	Object	Type	Length	Description
1	operator	Alpha Numeric	10	Person or System name that is performing the request on the Client's LOB System
2	account Number	Numeric, Right justified Zero filled	13	Account number to be verified
3	account Type	Numeric, right justified, zero filled	2	Account type: 01 - current / cheque account 02 - savings account 03 - transmission account 04 - bond account 06 - subscription share 00 - if this is not known
4	branch Code	Numeric, Right justified Zero filled	6	The branch code where the account number is held
5	idNumber	Alpha Numeric Left justified	13	The ID number field can accept the following parameters: <ul style="list-style-type: none"> Valid South African ID Number. Valid Passport Number. Valid Company Registration Number. <ul style="list-style-type: none"> On Company Reg Number, remove all the "\" or "/" Valid Estate Number
6	initials	Alpha-Numeric, left justified	5	A private individual's initials <ul style="list-style-type: none"> Upper case Optional field, can be left blank.

7	last Name	Alpha-Numeric, left justified	60	<p>This can be:</p> <ul style="list-style-type: none"> • Surname of a private individual; • Company name; • Estate name, <p>corresponding to the value supplied in the ID number field</p> <ul style="list-style-type: none"> • Upper case
---	-----------	----------------------------------	----	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

				<ul style="list-style-type: none"> Optional field, can be left blank
8	phone Number	Alpha-Numeric, left justified	15	Cell number to be verified as supplied by Client <ul style="list-style-type: none"> Optional field, can be left blank Cell number needs to be formatted as follows: " 270812345678 "
9	email Address	Alpha-Numeric, left justified	100	Email address to be verified as supplied by Client <ul style="list-style-type: none"> Optional field, can be left blank
10	user Reference	Alpha Numeric	20	A reference provided by the Client to identify the transaction on the Client's LOB system
11	account Exists	Alpha-Numeric, left justified	2	The Account exists at the institution <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
12	account Id Match	Alpha-Numeric, left justified	2	Identifying Number used to open the account at the relevant bank Response Parameter <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
13	initial Match	Alpha-Numeric, left justified	2	Response field for the private Individual's Initials as captured on the account at the relevant bank <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
14	last Name Match	Alpha-Numeric, left justified	2	The lastname matches the nominated account <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
15	account Open	Alpha-Numeric, left justified	2	Account in Active state? <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
16	account Accepts Credits	Alpha-Numeric, left justified	2	The Account accepts Credits <ul style="list-style-type: none"> 00 – Positive Match 99 – Negative Match 01 – Unable to verify

17	account Accepts Debits	Alpha-Numeric, left justified	2	The Account accepts Debits <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
18	account Open Gt Three Months	Alpha-Numeric, left justified	2	Period account Active greater than 3 Months?

		left justified		<ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
19	phone Valid	Alpha-Numeric, left justified	2	The Cellphone number provided matches the Account <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
20	email Valid	Alpha-Numeric, left justified	2	The Email address matches the account <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
21	Account Type Valid	Alpha-Numeric, left justified	2	Is the account type provided valid for specific account? <ul style="list-style-type: none"> 00 – Positive Match 01 – Negative Match 99 – Unable to verify
22	transaction Reference	Numeric	30	Unique transaction ID created by PbVerify
23	capture Date	Date Time		The date when PbVerify Received the Transaction. Formatted as follows: YYYY-MM-DD HH:mm:ss.SSS

9.5 Sample Response Message

```
{
  "success": true,
  "errmsg": "",
  "count": 1,
  "item": [
    {
      "operator": "HyphenQA",
      "accountNumber": "62005485942",
      "accountType": "02",
      "branchCode": "250655",
      "idNumber": "PAS123456",
      "initials": "P",
      "lastName": "IDS",
      "phoneNumber": "",
      "emailAddress": "",
      "userReference": "AccTypeChanged",
      "accountExists": "00",
      "accountIdMatch": "01",
      "initialMatch": "01",
      "lastNameMatch": "01",
      "accountOpen": "00",
      "accountAcceptsCredits": "00",
      "accountAcceptsDebits": "00",
      "accountOpenGtThreeMonths": "00",
      "phoneValid": "99",
      "emailValid": "99",
      "accountTypeValid": "00",
      "transactionReference": "3010195",
      "captureDate": "2018-06-26-11.38.57.706000"
    }
  ]
}
```

10. Message Code

Message Code	Description
00000	Successful
00001	Transaction sent to the bank. Waiting for feedback.
00007	Invalid accountType
00099	Technical error occurred, please contact pbVerify support
Other	This will be generated by bank and passed on with corresponding message code

11. CDV Error Code List

Message Code	Description
1054	Invalid branch number
1055	Invalid account number
1056	Account type invalid
1057	Institution not on master file
1059	Account number length is not valid
1084	Bond account type not allowed for this account
Other	This will be generated by bank and passed on with corresponding message code

12. Message Call Status errors

Message Call Status errors	Reference
Invalid access key	See section 6
Invalid Branch code	
Invalid ID/Company number	
Invalid Hash calculation	
Invalid Account Number	
ACCOUNT NUMBER length exceeds maximum allowed	
BRANCH CODE length exceeds maximum allowed	
EMAIL length exceeds maximum allowed	
ID/COMPANY NUMBER length exceeds maximum allowed	
INITIALS length exceeds maximum allowed	
OPERATOR length exceeds maximum allowed	
PHONE NUMBER length exceeds maximum allowed	
REFERENCE length exceeds maximum allowed	
SURNAME length exceeds maximum allowed	
Invalid [tag name] tag	

13. Http Codes

When consuming the new Web Application Description Language (WADL) the following potential http status codes could be returned in the Error Code element of both the JSON response objects.

Error Code	Description
200	Ok – Success.
400	Bad Request – States that an invalid input is provided. For example, validation error, missing data, invalid tags and incorrect Hash calculation .
500	Internal Server Error – States that server has thrown some exception while executing the selected method.

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