



Global PAYplus Version 4.6.6

STP Validation

Service-Oriented Architecture Guide

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STP Validation Version Control

Version Control

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STP Validation Introduction

1 Introduction

Note: This SOA Guide has not yet been certified for GPP V4.6; therefore, there may be inaccuracies in this document that may require amendments in the future. For more information, please contact your D+H Project Manager.

1.1 Target Audience

GPP is a robust payment engine whose workflow emulates the business flow of the bank or other financial institution. Configurable reference data profiles control the sequence of workflow steps and the actions performed in each step.

The STP Validation Service (STPRulesService) increases Straight Through Processing (STP) rates for payment messages. This service can be used by customers before the messages are processed by GPP. This service enhances payment processing by eliminating errors and omissions before they can cause a delay in payment.

This service is based on a business rule that defines an STP validation profile. This profile consists of payment attribute validations that are performed on the payment.

For example, when sending a tax payment to a certain country, the beneficiary account number must be 9 or 10 alphanumeric characters and payment details must not exceed 32 SWIFT-compliant characters.

1.2 About This Book

This guide describes Service Oriented Architecture (SOA) services that enable 3rd party applications to interface with GPP. It includes information about these SOA fine grain services:

- ValidateSTPRules
- LoadSTPRules

2 STPRuleService Description

2.1 Functional Description

For more information, see Introduction.

2.2 Pre-requisites (N/A)

2.3 Service Function

Perform either the Validate STP Rule Fine Grain Service or Load STP Rule Fine Grain Service.

- 2.4 Inputs (N/A)
- 2.5 Processing (N/A)
- 2.6 Output (N/A)

2.7 Fine Grain Services

- 2.7.1 ValidateSTPRules
- 2.7.1.1 Service Overview
- 2.7.1.2 Prerequisites
- 2.7.1.3 Service Function (N/A)
- 2.7.1.4 Input

Note: Unlike other services, in this service the credentials are not part of the service input parameters

Parameter	Tag Name	L	Format	Comment
D+H message	+Msg	1		A known structure (such as D+H message format)
ISO based details	++Pmnt			Any pre-defined ISO-based payment type (example PAIN 001 or PACS 008)
D+H extension	++Extn			D+H extension attributes. See <u>Table</u> 1: D+H Extension Attributes for some highlights and explanations

An example of possible input values located under the D+H <Extn> message structure.

Table 1: D+H Extension Attributes

Parameter	Tag Name	L	Format	Comment
Processing info.	ProcessingPersistentInfo	0		
Office	+P_OFFICE	1		Office information is taken into account when accessing the relevant static data.
Department	+P_DEPARTMENT	1		Department is required for entitlement checks
Debit side info.	DebitSide	0		An example of an input that requires validation (assuming there is proper setup in the system to evaluate the field structure)
Debit account number	+P_DBT_ACCT_NB	1		Debit account number to validate
Processing interim attributes	ProcessingTransientInfo	0		
Field ID to validate	+D_STP_FIELDS_TO_VALI D	1	String {01}	This optional field defines a specific attribute for validation. If not provided, the service validates the input of each field that is present.

2.7.1.5 Processing

The STP validation service can be activated in two different modes:

- Full mode: Where the payment is fully validated against all of the Validation profile fields.
- **Partial mode**: Where the service receives a list of Payment fields that need to be validated against the payment.

The service follows the following processing steps:

- 1 . STP Validation Load Service: To enable a third party to perform the STP validation checks outside of GPP, it is possible to perform a load call to the service. In this case, GPP responds with the following details:
 - Payment details
 - Payment type (as described below)
 - STP validation profile (as described below)
- 2. Define Payment type:
 - a. If Payment type is provided (P PAYMENT TP is not null), then skip this step.
 - b. If Payment type is not provided, then assess Payment type selection business rules and select Payment type for the payment.
 - i. If the business rule action = STOP or no matching rule is found, leave P_PAYMENT_TP field empty and fail the service (prompt error #60046).
 - ii. If a matching profile is found, continue processing (assess a Manipulation rule if found over the profile).
- 3. Define STP Validation profile: The purpose of this phase is to define a profile with a list of validations. It is expected that there will be two different type of profiles:
 - Profiles with the same name as the payment type
 - Profiles with a new/unique name.

The processing described below allows selection of either, as follows:

- a. Assess the STP validation selection business rules.
 - i. If a STOP action is defined, use the payment type as a profile name.
 - i. If a selected profile is not found terminate the service with a proper error.
 - ii. If no matching action is found, prompt error #.
 - iii. If a profile is selected, continue as described below.
- b. Following the service mode (full or partial), validate all profile fields (in full mode) or selective list of fields (in partial mode) versus the payment attribute.
- c. Perform ALL validations for each Payment field, i.e. min/max length, char. Set etc.)

Note: Continue processing even if a validation fails.

- d. Validate all relevant profile fields.
- e. Set message error for every failed validation.
- f. If the field is not found over the message, which may happen with an undefined UDF, prompt the following errors #60050, 60051, 60052, 60053, 60054, 60055, 60056 and 60057
- g. If at least 1 validation error occurred, create validation entry errors in message error.
- h. If all validations passed:
 - i. Continue processing
 - ii. Service passed validation
- i. If no error is found, assess the Field Validation rules.
 - i. These rules may create soft or hard errors (depending on the validation rule setup)
- j. If no error is found, assess the Field Manipulation rules
- k. Perform Message Validation rules assessment. These assessments allow for the creation of more complex validations rules (conditional rules: if field X exist then field Y should also exists)
- I. If Message Validation rules passed, assess Message Manipulation rules.

2.7.1.6 Output

D+H message is returned. It includes the errors that may be found per validation (see <u>Table5: Message Errors</u>) and some generic response information (see <u>Table 4: Generic Output Attributes</u>).

Table 2: Output

Parameter	Tag Name	L	Format	Comment
D+H message	+Msg	1		A known structure (such as D+H message format)
ISO based details	++Pmnt	2		Any pre-defined ISO-based payment type (example PAIN 001 or PACS 008)
D+H extension	++Extn	2		D+H extension attributes
Message errors	+++MsgErrors	3		Specific validation errors that were created due to STP Validation profile assessment. See <u>Table5: Message Errors</u> .

Table 3: Message Errors

Parameter	Level	Format	Comment
M_MSGERR_LINE	0		Place holder for repetitive possible errors
F_MSGERR_CODE	1	Number	Error code for the failed validation as specified setup by the error profiles
F_MSGERR_TIME_STAMP	1	Time	Time stamp. Example: 2011-01-06 13:36:35.851
F_MSGERR_SEVERITY	1	Number	A severity level as defined by the error profile.
F_MSGERR_CREATE_DAT E	1	Time	Error create date. Example: 2011-01-04T23:16:35
F_MSGERR_TIME_ZONE	1	(AZ,09) {3,3}	Office time zone. Example: 'EST'
F_MSGERR_PARAMS	1	String	Binding parameters when an error uses a dynamically derived information. Different binding parameters are divided by @@ Example: @@Dbt acct nb@@STRING@@@@@,@@5@@STRING@@
F_MSGERR_FIELD_LOGIC AL_ID	1	String	The field ID that failed validation. Example: 'P_DBT_ACCT_NB'

Table 4: Generic Output Attributes

Parameter	Level	Format	Comment
ResponseDetails	0		Response details
returnCode	1	Number	Holds the service error code. Set to zero when a passed service validation. Example: 60093
description	1	String	Holds the service failure description. Example: 'STP validation failure'

Return code where code 0 means that validation passed.

2.7.2 LoadSTPRules

2.7.2.1 Service Overview

This service returns the related reference data (STP Validation and Char Set profiles) so that the information is available for a third party to perform the validation. This service is invoked by a third party, and GPP only returns the related reference data.

2.7.2.2 Prerequisites

2.7.2.3 Service Function (N/A)

2.7.2.4 Input

Parameter	Tag Name	L	Format	Comment
Header	Header	0		Service definitions
Body	Body	0		Service detailed information
Load STP Rules Request	+loadSTPRulesRequest	1		Name of the service Load STP Rules Request
Request message	++Msg	2		Any declared and known message
Payment info.	+++Pmnt	3		Any information that resides under the ISO based section of the message
Extension info.	+++Extn	3	-	Any information that resides under the D+H extension section of the message
Processing info.	++++ProcessingPersist entInfo	4		
Payment type	++++P_PAYMENT_T P	5	String {11}	Mandatory Payment type attribute
Customized message attributes	++++UserDefinedFields	4		
Level	++++System	5		Defines the level of the customized fields (system, office or customer)
Payment category	+++++PMT_CTGORY		String {01}	

2.7.2.5 Processing

- 1. Ensure payment type attributes is provided.
 - a. If not provided, generate an appropriate error #60046.
- 2. Select STP rules selection business rule
 - a. If a rule is not found, find an STP profile under the exact name of the provided payment type.
 - b. If not found, generate error #60047.
- 3. Return the selected STP validation rule information.

2.7.2.6 Output

Parameter	Tag Name	L	Format	Comment
Body	Body	0		Response body
Load STP Rules Response	+loadSTPRulesResponse	1	'loadSTP RulesRes ponse' {11}	Name of the service 'loadSTPRulesResponse'
Message STP Rules	++messageStpRules	2	{0n}	D+H extension attributes
STP Profile Name	+++MESSAGE_STP_RULES_ NAME	3	String {11}	STP Profile name
STP Profile description	+++MESSAGE_STP_RULES_ DESCR	3	String {11}	STP Profile description
STP Profile record status	+++REC_STATUS	3	'AC' {11}	STP Profile record status (always expect 'AC' for active entry)
STP Profile unique profile ID	+++UID_MESSAGE_STP_RUL ES	3	String {11}	STP profile unique ID
Message STP Field Rule	++messageStpFieldRule	2		Repetitive list of different validation rules.
Message STP Field Rule Line	+++messageStpFieldRuleLine	3	{0n}	See Table 5: STP Validation Profile Fields

This table specifies the list of attributes that are set (and returned) in the STP Validation profile and, where required, from the Character Set profile. For an explanation about each field, refer to the GPP User Guide.

Table 5: STP Validation Profile Fields

Element name	UI Field name	Example
FIELD_LOGICAL_ID	Field ID	P_DBT_ACCT_NB
FIELD_LOGICAL_ID_XPATH		/FndtMsg/Msg/Extn/Extn/ProcessingPersi stentInfo/DebitSide/P_DBT_ACCT_NB
SPECIAL_CAPTION_CODE	Special caption code	True
STATE_IN_MESSAGE	State in message	0
STATE_IN_TEMPLATE	State in template	0
FIELD_DATA_TYPE	N/A	STRING
MIN_LENGTH	Min. length	5
MAX_LENGTH	Max. length	12
	Precision	
CONTENT_SOURCE	combo ID	P_=28
CASE_FORMAT	Case definition	А
CHAR_SET_IND	Char set validation	I (see Table 6 Char Set Profile Attributes when this field value is set to 'V')
CHAR_SETS	Char set	ABCD
DEFAULT_VALUE	Default	
MIN_VALUE	Min. value	5
MAX_VALUE	Max. value	12
VALIDATION_RULES_IND	Special validation rule	false
MANIPULATION_RULES_IND	Manipulation Rule	false
UID_MESSAGE_STP_FIELD_ RULE	N/A	FEDWIRE^P_DBT_ACCT_NB

List of relevant character set attributes where CHAR_SET_IND is set to 'V'

Table 6 Char Set Profile Attributes

Element name	UI field name	Example
CHAR_LIST	Char list	0123456789
SPACE_IND	Include space	false
LINE_FEED_IND	Include line feed	false
CARRIAGE_RETURN_IND	Include carriage return	false

2.8 Errors

This list is comprised of system validation errors that are set and managed by the user and system generated errors that are prompted by the system.

Table 7: Errors

Code	Description
60060	Value '[Field value]' of STP field '[STP field alias]' does not exist in following list: [Related content source list]
60061	Validation failed for STP field [STP field alias] Rule action: [Rule action]
60046	No payment type was selected
60047	Payment type [Payment type] is not defined in the system
60048	No STP rule was defined for payment type [Payment type]
60049	Field [Field logical ID] is not defined in the system
60050	STP rule for the following field is not provided: [Field logical ID]
60051	STP field '[STP field alias]' is marked as mandatory but has no value
60052	STP field '[STP field alias]' is marked as hidden but has a value in it
60053	Length of STP field '[STP field alias]' value is less then defined minimum length: [Defined min length]
60054	Length of STP field '[STP field alias]' value is greater than defined maximum length: [Defined max length]
60055	Precision of STP field '[STP field alias]' value is less then defined field precision: [Defined field precision]

Code	Description
60056	Value of STP field '[STP field alias]' value is less then defined minimum value: [Defined min value]
60057	Value of STP field '[STP field alias]' value is greater than defined maximum value: [Defined max value]
60058	No char sets can be derived for STP field [STP field alias]. MESSAGE_STP_FIELD_RULE UID: [MESSAGE_STP_FIELD_RULE UID]
28560	A generic error has occurred while trying to perform this action

3 Examples

3.1 Validation Mode Example

3.1.1 Request

Input parameters are: execution date, instruction ID, instruction amount and currency and debit account number.

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:q0="http://D+H.com/SCL/CommonTypes"</pre>
xmlns:q1="http://D+H.com/SCL/STPRulesService"
xmlns:soapenv="http://www.w3.org/2003/05/soap-envelope"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
 <soapenv:Body>
  <q1:stpRulesValidationRequest
      xmlns="http://D+H.com/SCL/CommonTypes">
   <q0:Msg>
    <q0:Pmnt>
     <Document
      xmlns="urn:iso:std:iso:20022:tech:xsd:pain.001.001.03"
           xmlns:n1="http://www.w3.org/2001/XMLSchema-instance">
      <CstmrCdtTrfInitn>
       <PmtInf>
        <RegdExctnDt>2009-05-04</RegdExctnDt>
        <CdtTrfTxInf>
         <PmtId>
          <InstrId>PT TST 1 1</InstrId>
         </PmtId>
          <InstdAmt Ccy="USD">5000</InstdAmt>
         </Amt>
        </CdtTrfTxInf>
       </PmtInf>
      </CstmrCdtTrfInitn>
     </Document>
    </g0:Pmnt>
    <a0:Extn>
     <q0:ProcessingPersistentInfo>
      <q0:P_OFFICE>US1</q0:P_OFFICE>
      <q0:P_DEPARTMENT>PSV</q0:P_DEPARTMENT>
      <q0:DebitSide>
      <q0:P_DBT_ACCT_NB>1234567</q0:P_DBT_ACCT_NB>
      </q0:DebitSide>
     </q0:ProcessingPersistentInfo>
     <q0:ProcessingTransientInfo/>
     <OperationalSection/>
    </q0:Extn>
   </q0:Msg>
  </gl:stpRulesValidationRequest>
 </soapenv:Body>
</soapenv:Envelope>
```

3.1.2 Response

3.1.2.1 Passed validation

Web service return code 0 along with elapsed time indication

```
<?xml version="1.0" encoding="UTF-8"?>
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"</pre>
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
 <soap:Body
   xmlns:ns1="http://D+H.com/SCL/STPRulesService">
  <stpRulesValidationResponse</pre>
    xmlns="http://D+H.com/SCL/STPRulesService">
   < Header
    xmlns="http://D+H.com/SCL/CommonTypes" xsi:nil="true"/>
       xmlns="http://D+H.com/SCL/CommonTypes">
    <Pmnt/>
    <Extn>
     <ProcessingPersistentInfo>
      <P TIME STAMP
    xsi:nil="true"/>
     </ProcessingPersistentInfo>
     <OaInfo>
      <D ELAPSED TIME MS>[STPRules]:6.375/D ELAPSED TIME MS>
      <OATest2/>
     </0aInfo>
    </Extn>
   </Msg>
   <OrigMsg
    xmlns="http://D+H.com/SCL/CommonTypes"
    xsi:nil="true"/>
   <ResponseDetails xmlns="http://D+H.com/SCL/CommonTypes">
    <returnCode>0</returnCode>
    <description/>
   </ResponseDetails>
  </stpRulesValidationResponse>
 </soap:Bodv>
</soap:Envelope>
```

3.1.2.2 Failed validation

There are 2 return codes. 1 (60053) per field that was defined by the user in the STP validation profile and one (60093) for the service final error code.

```
<?xml version="1.0" encoding="UTF-8"?>
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"</pre>
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
 <soap:Body</pre>
   xmlns:ns1="http://D+H.com/SCL/STPRulesService">
  <stpRulesValidationResponse</pre>
    xmlns="http://D+H.com/SCL/STPRulesService">
   <Header</pre>
    xmlns="http://D+H.com/SCL/CommonTypes" xsi:nil="true"/>
       xmlns="http://D+H.com/SCL/CommonTypes">
    <Pmnt/>
    <Fxtn>
     <MsgErrors>
      <M_MSGERR_LINE>
       <F_MSGERR_CODE>60053</F_MSGERR_CODE>
       <F_MSGERR_TIME_STAMP>2011-01-06 13:36:35.851/F_MSGERR_TIME_STAMP>
```

```
MSGERR_SEVERITY>0</F_MSGERR_SEVERITY>
       <F MSGERR CREATE DATE>2011-01-04T23:16:35</F
       <F_MSGERR_TIME_ZONE>EST</F_MSGERR_TIME_ZONE>
       <F_MSGERR_FAULT/>
<F_MSGERR_PARAMS>@@Dbt acct nb@@STRING@@@@,@@5@@STRING@@</f_MSGERR_PARAMS>
       <F_MSGERR_DISPLAY>0</f_MSGERR_DISPLAY>
<F_MSGERR_FIELD_LOGICAL_ID>P_DBT_ACCT_NB</f_MSGERR_FIELD_LOGICAL_ID>
      </m MSGERR_LINE>
     </MsgErrors>
     <ProcessingPersistentInfo>
      <P_TIME_STAMP
    xsi:nil="true"/>
     </ProcessingPersistentInfo>
     <OaInfo>
      <D_ELAPSED_TIME_MS>[STPRules]:2.784/D_ELAPSED_TIME MS>
      <QATest2/>
     </QaInfo>
    </Extn>
   </Msg>
   <OrigMsg
    xmlns="http://D+H.com/SCL/CommonTypes"
    xsi:nil="true"/>
   <ResponseDetails xmlns="http://D+H.com/SCL/CommonTypes">
    <returnCode>60093</returnCode>
    <description>STP validation failure</description>
   </ResponseDetails>
  </stpRulesValidationResponse>
 </soap:Body>
</soap:Envelope>
```

3.2 Load Mode Example

3.2.1 Request

Input parameters for load service are: extension information such as office & department, debit account details, payment type & payment category

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:q0="http://D+H.com/SCL/CommonTypes"</pre>
 xmlns:q1="http://D+H.com/SCL/STPRulesService"
 xmlns:soapenv="http://www.w3.org/2003/05/soap-envelope"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
 <soapenv:Header/>
 <soapenv:Body>
      xmlns="http://D+H.com/SCL/CommonTypes">
   <q0:Msg>
    <q0:Pmnt>
     <Document
      xmlns="urn:iso:std:iso:20022:tech:xsd:pain.001.001.03"
xmlns:n1="http://www.w3.org/2001/XMLSchema-instance"/>
    </q0:Pmnt>
    <q0:Extn>
     <q0:ProcessingPersistentInfo>
      <q0:P OFFICE>US1</q0:P OFFICE>
    <q0:P DEPARTMENT>PSV</q0:P DEPARTMENT>
      <q0:DebitSide>
       <q0:P_DBT_ACCT_NB>22222222</q0:P_DBT_ACCT_NB>
       <q0:P_DBT_ACCT_CCY>USD</q0:P_DBT_ACCT_CCY>
       <q0:P_DBT_ACCT_OFFICE>US1</q0:P_DBT_ACCT_OFFICE>
      </q0:DebitSide>
     <q0:P_PAYMENT_TP>FEDWIRE</q0:P_PAYMENT_TP>
</q0:ProcessingPersistentInfo>
     <q0:UserDefinedFields>
      <q0:System>
       <q0:PMT CTGORY>1234</q0:PMT CTGORY>
```

```
</q0:System>
  <q0:Office/>
  <q0:Customer/>
  </q0:UserDefinedFields>
  </q0:Extn>
  </q0:Msg>
  </q1:loadSTPRulesRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

3.2.2 Response

This is an extract from the entire service response.

It includes a list of STP rule profiles (named: MESSAGE_STP_RULES_DESCR) and then a list of all associated messageStpFieldRule (different validations that are associated with the profile)

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"</pre>
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance">
   <soap:Body xmlns:ns1="http://D+H.com/SCL/STPRulesService">
      <ns1:loadSTPRulesResponse xmlns="http://D+H.com/SCL/STPRulesService">
         <stp:messageStpRules xmlns:stp="http://D+H.com/SCL/STPRulesService">
            <stp:MESSAGE_STP_RULES_NAME>FEDWIRE</stp:MESSAGE_STP_RULES_NAME>
            <stp:MESSAGE_STP_RULES_DESCR>Fed Wire validation profile</stp:MESSAGE_STP_RULES_DESCR>
            <stp:REC_STATUS>AC</stp:REC_STATUS>
            <stp:UID_MESSAGE_STP_RULES>FEDWIRE</stp:UID_MESSAGE_STP_RULES>
         </stp:messageStpRules>
          stp:messageStpFieldRule xmlns:stp="http://D+H.com/SCL/STPRulesService">
            <stp:messageStpFieldRuleLine>
               <stp:FIELD_LOGICAL_ID>***^ABC01634</stp:FIELD_LOGICAL_ID>
               <stp:SPECIAL_CAPTION_CODE xsi:nil="true"/>
               <stp:STATE IN MESSAGE>O</stp:STATE IN MESSAGE>
               <stp:STATE_IN_TEMPLATE>O</stp:STATE_IN_TEMPLATE>
               <stp:CONTENT SOURCE xsi:nil="true"/>
               <stp:CASE_FORMAT>A</stp:CASE_FORMAT>
               <stp:CHAR SET IND xsi:nil="true"/>
               <stp:CHAR_SETS xsi:nil="true"/>
               <stp:DEFAULT_VALUE xsi:nil="true"/>
               <stp:VALIDATION_RULES_IND>false</stp:VALIDATION_RULES_IND>
               <stp:MANIPULATION_RULES_IND>false</stp:MANIPULATION_RULES_IND>
<stp:UID_MESSAGE_STP_FIELD_RULE>FEDWIRE^***^ABC01634</stp:UID_MESSAGE_STP_FIELD_RULE>
            </stp:messageStpFieldRuleLine>
```

Appendix A: Glossary

The table below lists the terms used in this document.

Term	Description
FI	Financial Institution
GPP	Global PAYplus Services Platform
ISO	International Organization for Standardization
PACS	Payments Clearing and Settlement
PAIN	Payment Initiation
SOA	Service-Oriented Architecture
STP	Straight-Through Processing
SWIFT	Society for Worldwide Interbank Financial Telecommunication