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Technical Specification -
Domestic payments and
deposits



ÍST TS 310:2020

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ÍST TS 310:2020

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1. edition

Table of contents

Foreword	1
Introduction	3
1 Scope	5
2 Normative references, definitions and data elements	7
2.1 Normative References	7
2.2 Terms and definitions	7
2.3 Payment service directive terms	8
2.4 Data definitions	9
3 Implementation	11
3.1 Service Overview	11
3.2 Payment Initiation Service	12
3.2.1 Overview	12
3.2.2 Domestic Payment Product Data Elements	13
3.3 Bulk Payments	17
4 Accounts Service	20
5 Confirmation of Funds	24
6 Appendix	25
6.1 Errors	25
6.2 Mapping from older implementations	25
6.3 Domestic adaptations of the NextGenAPI framework	25
6.3.1 The localized file	26

Foreword

This ÍST Technical Specification was developed in accordance with “ÍST Reglur um tækniforskriftir, tækniskýrslur og vinnustofusamþykktir” (e. IST rules on Technical Specifications, Technical Reports and Workshop Agreements). The TS (Technical specification) was prepared by the technical committee TN-FMP (The Technical Committee on Financial Services) that operates within FUT (Sector committee for ICT standardisation) following a public call for participation within TN-FMP. The final draft was sent to the TN-FMP on the 2022-01-XX and approved by correspondence on the 2022-02-XX. The text of ÍST TS-310 was submitted to IST for publication on 2022-03-YY.

The accompanying OpenAPI 3.0.1 definition “IOBWS3.0.yaml” located at <https://github.com/stadlar/IST-FUT-FMTH/tree/master/Deliverables>, should be viewed as an integral part of ÍST TS-310.

The document “ÍST TS 310_2020 Domestic payments and deposits.md” is the source of this rendition, and versions of that document will be used for future errata and clarifications in accordance with the procedures to be laid out in the workshop agreement ÍST WA-316, IOBWS 3.0 Technical Guidelines. rules are outlined in the README.md accompanying the Github Git repository and are accepted by the participants in TN-FMP alongside this specification. These guidelines establish the workgroup TN-FMP-VH-7 as in charge of ongoing monitoring of submitted issues or pull requests made to the repository, which fall outside the permit of other regular workgroups. TN-FMP-VH-7 will evaluate if changes ready to be accepted into the repository, and when or if, they warrant patches or minor releases to the specification. Versioning will be adheres to the Semantic Versioning scheme but each minor release will require a Workgroup agreement in accordance with the “ÍST reglur” referenced above.

The work on the ÍST TS was primarily funded by Íslandsbanki, Arion Banki and Landsbankinn. It is the result the workgroup TN-FMP-VH-8. In parts the work is the earlier workshop agreement WA-310 authored by TN-FMP-VH-1 on Technical requirements and TN-FMP-VH-2 on Business requirements, with participation of an external consultant. WA-310 was approved within TN-FMP on the 2019-12-12. ÍST TS-310 should, however, not be viewed as a direct sucesor to that agreement, which focused on laying groundwork for PSD2 compliance. Instead TS-310 is the next version of the Icelandic Online Banking Services, replacing TS 161:2013 *Greiðslur* and TS 164:2013 *Yfirlit bankareikninga*.

ÍST TS-310 is not subject to any patent rights. The underlying OpenAPI specification is derived from version 1.3.8 of the Berlin Group’s NextGenPSD2 Framework , and therefore also distributed under a Creative Commons Attribution 4.0 International Public License (CC BY).

ÍST TS 310:2020

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Introduction

This Technical Specification (TS) present version 3.0 of the Icelandic Online Banking Services (IOBWS), for domestic payments and deposits.

Previous versions of IOBWS, released in 2007 and 2013 respectively, used the most recent OASIS SOAP standards at the time, to define common web service interfaces for the Icelandic commercial and savings banks. This enabled software vendors, enterprises and service providers to integrate their accounting, payment, and information systems with the bank's services, to act on behalf of the customers and with full access to their data.

Iceland, with its homogeneous financial infrastructure based on the centralized Banks' Data Centre (Reiknistofa bankanna, or RB), has enjoyed real-time gross settlements and instant credit transfers nationwide since 1987. Other universally accepted services count the common collection solution (Kröfupotturinn) for issuing and paying claims, topping up creditcards, or A/B Giro. All this functionality has been available through IOBWS v1 and v2, comparable to the functionality enjoyed by users of the online banking Web UIs.

When initiating work on the previous versions, the participants in the TN-FMP reviewed existing and emerging specifications in the global or mostly European financial industry. None were deemed a good fit at the time for local adaptation, as they reflected inherent the legacy in inter-bank communications outside of Iceland, even in the case of the other Nordic countries. Therefore, v1 and v2 of IOBWS were somewhat specific to the current functionality available in the underlying RB systems.

Meanwhile, the broader market especially in Europe has been catching up, and the Icelandic banks' have migrated to new core banking systems and with the Central Bank of Iceland, implemented a new clearing and settlement mechanisms (CSM). One of the goals of IOBWS v3, set forward by TN-FMP, was to move closer to the standards used by those systems such as ISO 20022, at least through application of a comparable dictionary and data elements.

The Open Banking regulation in the UK and the PSD2 regulation issued by the European Parliament has triggered initiatives to standardize access to payment functionality and account information, on behalf of customers by third parties. One such effort, the NextGenPSD2 Framework developed by the Berlin Group, has met a broad acceptance in the EEA. The data model references ISO 20022, and is close enough to the direction of the Icelandic market to make it relatively straightforward to adapt it

ÍST TS 310:2020

as the new base for the IOBWS, instead of continuing to maintain an independent lineage of API specifications.

Another goal of the IOBWS version 3 charter set forth by TN-FMP and achieved by adopting the NextGenPSD2 Framework is the transition from SOAP to a REST-like API defined by a recent iteration of the Open API Specification. Along with support for modern authentication and authorization standards, this should address some of the perceived complexity in adapting IOBWS to various use cases, platforms and programming languages that have come to the fore after the release of the previous IOBWS versions.

1 Scope

ÍST TS-310 defines web application programming interfaces implemented by Icelandic commercial and savings banks to expose shared functionality and information for domestic payments and deposits, under the auspices of the Icelandic Online Banking Web Services (IOBWS).

Other ÍST Technical Specifications exist that address related but discrete units of the overall IOBWS framework, either as new additions or upgrades to the previous specifications. Some crosscutting guidelines and shared concerns are addressed in the workshop agreement ÍST WA-316. As the consumption and implementation of each individual part of IOBWS are optional, the documents aim to be independent of each other.

However, due to the origin of the underlying OpenAPI specification in the Berlin Group NextGenPSD2 Framework, ÍST TS-310 on Domestic Payments and Deposits, and ÍST TS-313 on Foreign Payments, overlap quite significantly. Both are based on the “IOBWS3.0.yaml” definition document, and share schema types and API resources. They will still be treated as separate entities but stakeholders are advised to reference the other document if more context is required.

The approach in ÍST TS-310 is to focus on the domestic adaptations to the relevant parts of the NextGenPSD2 framework, and the information needed to tie that to earlier IOBWS versions or other such implementations, and even the Core Banking systems involved.

The intended audience for the specification document ÍST TS-310 is the implementors of banking services as well as of those systems that will consume them as API clients. The reader is expected to have a basic understanding of the Icelandic financial products involved. Further documentation on business aspects of those products will be available from the banks in question as they can involve service agreements and the end customers’ contractual preferences and benefits.

The previous IOBWS technical specifications did out of necessity, largely consist of expressing the intent and actual content, otherwise found in the associated XML Schema and SOAP definitions, in a human-readable format. The expectation is that for ÍST TS-310, the technical service definitions and JSON data schemas in the accompanying OpenAPI specification can more readily be understood using one or more of the numerous utilities that are able to convert them into documentation or even navigatable UIs.

Consequently, the ÍST TS-310 specification avoids the unnecessary repetition of information found in the technical contract IOBWS3.0.yaml. Instead, the rest of the document focuses on the essential

ÍST TS 310:2020

information needed to understand the domestic context of services, schema types and service flows in relation to the NextGenPSD2 framework, and what constitutes the common core required to implement ÍST TS-310.

2 Normative references, definitions and data elements

2.1 Normative References

The following documents are referred to in ÍST {{spec_id}} as some of their content constitutes requirements of this document. Only the edition cited applies, if newer editions exist.

Alþingi. (2019). *Lög um rafræna auðkenningu og traustþjónustu fyrir rafræn viðskipti nr. 55 21. júní 2019.*

Alþingi. (2021). *Lög um greiðsluþjónustu nr. 114 25. júní 2021.*

International Organization for Standardization. (2020). *ISO 13616-1:2020. Financial services - International bank account number (IBAN). Part 1: Structure of the IBAN.*

The European Parliament. (2014). *Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC.*

The European Parliament. (2015). *Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC.*

2.2 Terms and definitions

- **Berlin Group** is a pan-European payments interoperability standards and harmonisation initiative with the primary objective of defining open and common scheme- and processor-independent standards in the interbanking domain between Creditor Bank (Acquirer) and Debtor Bank (Issuer), complementing the work carried out by e.g. the European Payments Council. As such, the Berlin Group has been established as a pure technical standardisation body, focusing on detailed technical and organisational requirements to achieve this primary objective.

ÍST TS 310:2020

- **Clearing and Settlement Mechanisms (CMS)** refers to the processes or systems used in exchange between two payment service providers. In Iceland, the Central Bank acts as the interbank intermediary in this scope.
- **Core Banking Systems (CBS)** is the umbrella term for those systems handling payments and transaction accounts in relation to this specification.
- **Electronic IDentification, Authentication and trust Services (eIDAS)** refers to regulation 910/2014 (The European Parliament, 2014), which replaced previous directive 1999/93/EC. It was introduced to Iceland law through act no. 2019/55 (Alþingi, 2019).
- **ISO 20022** is an ISO standard for electronic data interchange between financial institutions.
- **Kennitala** (often abbreviated as **KT**) is the unique national identification number issued by the Registers Iceland (ic. Þjóðskrá Íslands) and used by governmental bodies and enterprises to identify individuals, and through a comparable schema under the Iceland Revenue and Customs (ic. ríkisskattstjóri), legal entities in Iceland.
- **The OpenAPI Specification (OAS)** defines a programming language-agnostic interface description for HTTP APIs, which allows both humans and computers to discover and understand the capabilities of a service without requiring access to source code, additional documentation, or inspection of network traffic.

2.3 Payment service directive terms

As the ÍST TS-310 owes much of its core to the NextGenPSD2 framework, the terms found in the OpenAPI specification and this document may reflect that background. Some of the main definitions are included here for context.

- **Payment Services Directive 2 (PSD2)** was instituted by the European Parliament as EU 2015/2366 (The European Parliament, 2015), and meant to further open up payment services on the internal EEA market. It was introduced to Iceland law through act no. 2021/114 (Alþingi, 2021). PSD2 contains regulations of new services to be operated by so-called Third-Party Payment Service Providers on behalf of a Payment Service User, by leveraging Strong Customer Authentication. Due to the lineage connecting PSD2 with IOBWS v3.0, the main terms are described:
 - **Account Information Service Provider (AISP)** are *TPPs* with permission to connect to a transaction account and use the information to provide a **Account Information Services (AIS)** as defined in article 67 of EU 2015/2366 (The European Parliament, 2015).
 - **Confirmation of the Availability of Funds Service** to be used by Payment Instrument Issuing Service Provider (PIISP) *TPP* as defined by article 65 of EU 2015/2366 (The European Parliament, 2015).

ÍST TS 310:2020

- **Payment Initiation Service Provider (PISP)** can, given customers consent, initiate payments and transactions on the their behalf, from their bank account, thereby providing **Payment Initiation Service (PIS)** as defined by article 66 of EU 2015/2366 (The European Parliament, 2015).
- **Payment Service User (PSU)**. The end-user of payment services, and customer of the bank in the IOBWS context.
- **Strong Customer Authentication (SCA)**, refers in the scope of PSD2 to an authentication mechanism based on the use of two or more elements that are independent, so a breach of one does not compromise the others. The recognized elements or factors can be based on:
 - * Knowledge, something only the user knows e.g. a password.
 - * Possession, something only the user possesses e.g. a particular cell phone and number.
 - * Inherence, something the user is or has, e.g. a fingerprint or iris pattern.
- **Third Party Provider (TPP)** is referenced in the OpenAPI specification reflecting the PSD2 background, when the client system is initiating operations or requesting information on behalf of the end-consumer.

2.4 Data definitions

The International Bank Account Number (IBAN) format for Icelandic accounts should follow the specification set forth in ISO 13616-1:2020 (International Organization for Standardization, 2020) as shown in the table 2.1 below.

Table 2.1: Icelandic IBAN with example

	Country Code	Check Digits C	National Bank ode	Branch ID	Account type	Account Number K	Account Holders ennitla
Description	IS	2 digits	2 digits	2 digits	2 digits	6 digits	10 digits
Example	IS	14	01	59	26	007654	5510730339

The Unique Claim Identifier references the ID of a claim based on the collection solution Kröfupotturinn. To initiate a payment to settle a claim, or relate transaction information about a previous payment, the claim ID should be formatted as a BBAN, Basic Bank Account Number. The method is shown below in table 2.2. Claim Payments will therefore only include BBAN, not IBAN as a creditor

ÍST TS 310:2020

account reference.

Table 2.2: Claim key transformed to BBAN with example

	Claimant Id (kennitala)	National Bank Code	Branch ID	Fixed ledger Id	Account Number	Delimiter	Due Date
Description	10 digits	2 digits	2 digits	2 digits	6 digits	Plus sign	DDMMYY
Example	5510730339	01	59	66	007654	+	311220

3 Implementation

3.1 Service Overview

Part of the decision to adopt the NextGenPSD2 framework, agreed upon by TN-FMP-VH-1 on Technical Requirements and TN-FMP-VH-2 on Business Requirements, called for staying as true to the specification as possible.

However, not unlike other existing domestic adaptations of NextGenPSD2, additional functionality was needed to support payment operations and account information expected by the Icelandic market. The original workgroup did so by extending existing schema types in the NextGenPSD2 OpenAPI contract while removing elements and services not directly applicable to IOBWS. The intention was to streamline the specification but developers with previous exposure to NextGenPSD2 found it turned out challenging to understand the changes, while the overall implementation details still remained opaque for those looking to migrate from earlier IOBWS versions.

Workgroup TN-FMP-VH-8 was therefore charged with revising the 3.0 version of IOBWS. The group tried to address two primary concerns; Clarify how the domestic payments and deposits products fit into NextGenPSD2 as well as simplifying comparison against later releases by the Berlin Group. The result should make it straightforward to weigh potential additions to or replacements of the current domestic adaptations included in the IOBWS, in the future.

The decision made by the TN-FMP-VH-8 was therefore to keep most of the original NextGenPSD2 OpenAPI definition intact, even those services and types that are not currently applicable to the Icelandic context or intended uses of the IOBWS. The domestic payments and deposits products (see section 3.2.1 and table 3.2 below) are defined separately with applicable JSON schema types, leaving the original e.g. SEPA message types intact. They share the generic data elements along with the 'native' payment types, reusing the services, and operations for payments that are at the core of the NextGenPSD2 specification.

The table 3.1 below list the implications for the OpenAPI YAML contract. It contains the Constants and Signing Basket services, as removing or commenting those out would have had a high impact on the contract structure. They will, however, not be implemented as part of this specification, though this does not preclude their use in other contexts.

ÍST TS 310:2020

Table 3.1: Service support in ÍST TS-310.

Payment Initiation Service (PIS)	Supported by all implementors of TS-310 in accordance with the specification (see later notes on Periodic Payments).
Account Information Service (AIS)	Supported by all implementors of TS-310 in accordance with the specification.
Confirmation of Funds Service (PIIS)	Supported by all implementors of TS-310, in accordance with the specification.
Consent Service	Explicitly not part of the TS-310 specification, but included for comparison and compatability with the NextGenPSD2 OpenAPI contract.
Signing Baskets Service (SBS)	Explicitly not part of the TS-310 specification, but included for comparison and compatability with the NextGenPSD2 OpenAPI contract.

3.2 Payment Initiation Service

3.2.1 Overview

The domestic payments and deposits products supported by ÍST TS-310 are as shown in table 3.1 below. All those are defined as JSON objects, and other payment types are not supported by the specification.

Instant credit transfers are the only available type in Iceland for an account to account transfer between domestic banks. The reference to ‘instant’ does not preclude additional business rules applying for e.g. high-value payment processing within each bank, or variations in the payment lifecycle within e.g. ‘end-of-business-day’ periods. This could result in consumers of the IOBWS ÍST TS-310 services being exposed to intermediary transaction status codes in the payment execution, some of which have not previously been visible or mapped in IOBWS return codes. Later changes in Core Banking Services and Clearing and Settlement Mechanisms might also affect statuses returned so consumers, so all of the available by the specification should be expected.

ÍST TS 310:2020

Table 3.2: Domestic payment products.

Credit Transfers	Instant credit transfer of an amount between two accounts within the same bank or between two domestic banks.
Claim Payments	Make a withdrawal from an account to pay a claim (e.g. a bill). The claim can be created in any domestic bank.
Payment Card Deposits	Make a withdrawal from an account to pay onto the account behind a payment card, within the same bank or between two domestic banks.

For each of the payment products, the support for payment services is given in table 3.3. Periodic payments are distinct from future dating a payment, which is supported in a similar manner to previous versions of IOBWS as part of creating a payment (see `requestedExecutionDate`). At this time, behaviour for periodic payments is not supported by the ÍST TS-310.

Table 3.3: Availability of payment service.

payments	Supported by all implementors of TS-310 in accordance with the specification, for all domestic payment products.
bulk-payments	Supported by all implementors of TS-310 in accordance with the specification, for all payment products.
periodic-payments	Explicitly not part of the TS-310 specification, but included for comparison and compatability with the NextGenPSD2 OpenAPI contract.

3.2.2 Domestic Payment Product Data Elements

The following elements are used in the domestic payment products under scope for ÍST TS-310:

Table 3.4: Data elements for domestic payments.

Data Element	Credit Transfers	Claim Payments	Credit Card Deposits
endToEndIdentification	Optional	Optional	Optional
debtorAccount	Mandatory	Mandatory	Mandatory
debtorId	Optional	Optional	Optional

ÍST TS 310:2020

Data Element	Credit Transfers	Claim Payments	Credit Card Deposits
chargesAccount	N/A	N/A	N/A
ultimateDebtor	Optional	Optional	Optional
ultimateDebtorId	Optional	Optional	Optional
instructedAmount	Mandatory	Mandatory	Mandatory
creditorAccount	Mandatory	Mandatory	Mandatory
creditorAgent	N/A	N/A	N/A
creditorAgentAddress	N/A	N/A	N/A
creditorName	N/A	N/A	N/A
creditorId	Optional	Optional	Optional
creditorAddress	N/A	N/A	N/A
ultimateCreditor	Optional	Optional	Optional
ultimateCreditorId	Optional	Optional	Optional
icelandicPurposeCode	Optional	Optional	Optional
chargeBearer	N/A	N/A	N/A
remittanceInformationUnstructured	Optional	Optional	Optional
remittanceInformationStructured	Optional	Optional	Optional
requestedExecutionDate	Optional	Optional	Optional
partialPayment	N/A.	Mandatory	N/A.
serviceLevel	N/A	N/A	N/A
centralBankPurposeCode	N/A	N/A	N/A

To elaborate on the use of particular attributes the following table 3.5 contains additional information on top of the schema definitions. Notes on individual data elements or usage patterns follow in the subsections.

ÍST TS 310:2020

Table 3.5: Detailed description of ÍST TS-310 payments properties.

Field	Description
endToEndIdentification	Intended for ID, short message or description that will be communicated to the creditor, across different banks. It replaces the bill number (ic. <i>seðilnúmer</i> , TNUM_I/TNUM_U). While supporting 35 characters, only the first 7 chars can reliably flow between all possible CB systems, reports, and even client systems, due to legacy expectations and implementations.
debtorAccount	Debtor account is the account money is being transfer from.
debtorId	For the domestic payment products, this element should contain the kennitala of the debtor, owner of the debtorAccount.
ultimateDebtor	Ultimate Debtor identifies the party that owes the cash to the creditor, e.g. as a result of receipt of goods or services. Used in those cases where it is different from the debtor/payor.
ultimateDebtorId	Ultimate Debtor identifies the party that owes the cash to the Creditor as a result of receipt of goods or services. Ultimate debtor kennitala is included when different from the debtor Id.
instructedAmount	Amount and currency to be transferred.
creditorAccount	Creditor account is the account used to transfer money to Beneficiary's account. In the case of a claim payment, this would be contain the claim key represented as a BBAN number.
creditorId	Used for the kennitala of the creditor, whose account is credited with the payment. As the kennitala is part of the Icelandic IBAN, and BBAN numbers, this is an optional field.

ÍST TS 310:2020

Field	Description
creditorName	The creditor name is optional and ignored when kennitala is part of the Icelandic IBAN, and BBAN numbers, or provided in creditorId.
creditorAddress	The creditor address is not needed in domestic payments where kennitala can be used as lookup key through the National Registry.
ultimateCreditor	The creditor (for example a finance company or an intermediary in a business transaction), may be different from the ultimate creditor. The debtor can enter who the final/real beneficiary of the payment is. In the case of Payment Card Deposit using masked PAN, ultimate Creditor contains the owner of the card.
ultimateCreditorId	In the case of Payment Card Deposits using masked PAN the Ultimate Creditor ID contains kennitala of the card owner. [TODO: What is this]
icelandicPurposeCode	The purpose is the equivalent of the category code (ic. <i>textalykill</i>) used to classify the transaction. Restricted to codes available in each originating bank.
remittanceInformationStructured	The debtors's information about the payment. An array of remittance elements but currently only used for the equivalent of the IOBWS v2.0 Out.Reference (ic. <i>tilvísun</i>). This single array element must be of type 'TILV_U' Previously the equivalent data element was mainly used for the kennitala of the creditor, now a separate parameter. It can however convey other information and therefore included.
remittanceInformationUnStructured	Is used for payment description visible for both parties. Only 16 characters can currently be expected to reliably flow between all systems, even if the field accepts 140 characters.
requestedExecutionDate	Execution date if in the future, fully equivalent to the IOBWS v2.0 requestedExecutionDate for future payments (ic. <i>framvirk greiðsla</i>).

ÍST TS 310:2020

Field	Description
executionDate	Execution date if in the future, equivalent to the IOBWS v2.0 requestedExecutionDate for future payments (ic. <i>framvirk greiðsla</i>).
partialPayment	Applies to Claim Payments when the debtor intends to only pay part of the amount owed, towards an existing claim. The claim needs to allow partial payment, else an error occurs.

The remittanceInformationStructured mentioned in table 3.5 is only used currently to carry the debtor's payment reference. To identify this usage, the **type**

Listing 3.1: Example of the *remittanceInformationStructured* data element.

```
1 remittanceInformationStructured: {  
2   reference: "Maximum 16 chars"  
3   type: "TILV_U"  
4 }
```

3.3 Bulk Payments

Bulk payments are supported for all ÍST TS-310 payment types. For a bulk payment all collected payments shall be based on the same payment product, consistent with the approach of the NextGenPSD2 framework. The domestic bulk approach allows for multiple debtor accounts when batchBookingPreferred is false and consequently, debtorAccount not included.

ÍST TS 310:2020

Table 3.6: Description of domestic bulk payment main body.

Data Element	Type	Condition	Description
batchBookingPreferred	Boolean	Optional	When the element is true, the debtor prefers only one booking entry. If this element equals false, the debtor prefers individual booking of all contained individual transactions. The bank will follow this preference according to contracts agreed on with the debtor.
debtorAccount (incl. type)	Account Reference	Optional	If batch booking is preferred, the debtor account should be supplied here but not on the individual payments in the child collection.
paymentInformationId	Max35Text	Optional	Unique identification assigned by the sending party to unambiguously identify this bulk. Replaces NameOfBatch in IOBWS v2.0 and PaymentsID , that was generated by the receiving bank. Note: This attribute might be considered mandatory in future versions of the specification.
requestedExecutionDate	ISODate	Optional	Determines if the payments contained in the bulk will be executed at the given, later date.

ÍST TS 310:2020

Data Element	Type	Condition	Description
payments	Bulk Entry	Mandatory	The Bulk Entry is a JSON Type which mirrors the supported domestic payment products for single payments, excluding the data element requestedExecutionDate. DebtorAccount should also be excluded if batch booking is preferred, but mandatory if either batchBookingPreferred is 'false' or the element missing.

4 Accounts Service

When querying information about domestic accounts, there exists an option to additionally request information on the allowed credit limit (*withCreditLimitQuery* data element). This matches what Icelandic banks offer as “yfirdráttarheimild”, or overdraft limit. The returned data element is called *creditLimit*, instead of the somewhat confusingly named “Overdraft” element used in previous IOBWS versions.

Listing 4.1: Example of information about an account with credit limit. TODO: Provide Icelandic Example in YAML

```

1      {
2          "account":
3              {
4                  "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e80f",
5                  "iban": "FR7612345987650123456789014",
6                  "currency": "EUR",
7                  "ownerName": "Heike Mustermann",
8                  "product": "Girokonto",
9                  "cashAccountType": "CACC",
10                 "name": "Main Account",
11                 "_links":
12                     {
13                         "balances": {"href": "/v1/accounts/3dc3d5b3-7023-4848-9853-f5400a64e80f/balances"},
14                         "transactions": {"href": "/v1/accounts/3dc3d5b3-7023-4848-9853-f5400a64e80f/transactions"}
15                     }
16             }
17     }
```

The definition of the transaction details returned as a list, includes elements that are applicable to the relatively broad range of use cases the NextGenPSD2 covers. In table ?? the elements that are either most applicable to the domestic context or might need further explanation are listed.

ÍST TS 310:2020

Table 4.1: Description of transaction details. {#tbl:transaction_domestic}

Field	Rule	Description
transactionId	Mandatory	Unique identifier for this record.
entryReference	Mandatory	Payment Correlation ID.
endToEndId	Optional	Short description.
mandateId	N/A ~	~Identification of Mandates.~~
checkId	N/A	Not used.
currencyExchange	Optional	Returned when the transaction relates to any currency exchange.
bookingDate	Optional	The date when the entry was booked.
valueDate	Mandatory	The date at which assets became available.
transactionAmount	Mandatory	Amount and currency of this record.
creditorId	Optional	Creditor ID, or kennitala.
creditorName	Optional	Creditor name.
creditorAccount	Optional	Creditor account.
creditorAgent	Optional	The BICFI, Business Identifier Code of the financial institution, or other organization identification.
ultimateCreditor	Optional	Ultimate creditor.
debtorName	Optional	Debtor name.
debtorAccount	Optional	Debtor account.
debtorAgent	Optional	The BICFI, Business Identifier Code of the financial institution.
ultimateDebtor	Optional	Ultimate debtor.
remittanceInformationUnstructured	Optional	Payment description visible for both parties. Only 16 characters can reliably be expected to flow between banks.

ÍST TS 310:2020

Field	Rule	Description
remittanceInformationStructured	Optional	Array of remittance, though only used currently for the 16 character debtor reference.
additionalInformation	Optional	Additional transaction related information.
purposeCode	N/A	Not returned as these codes have currently not been adapted to the uses that the Icelandic purpose code covers. Future Core Banking or Clearing changes might affect this.
bankTransactionCode	N/A	Not used currently for similar reasons as purposeCode.
proprietaryBankTransactionCode	N/A	Not used currently, similar to the previous purposeCode and bankTransactionCode.
balanceAfterTransaction	Optional	Balance after the transaction has been performed
_links	Optional	Link to transaction details
transactionTimestamp	Mandatory	Execution datetime of the record.
ultimateCreditorId	Optional	Ultimate creditor ID, or kennitala when available.
debtorId	Optional	Debtor kennitala.
ultimateDebtorId	Optional	Ultimate debtor kennitala.
icelandicPurpose	Optional	Returns the text codes used as simple transaction categorization, (ic. <i>textalykill</i>), with description.

An example of how this would look for a Icelandic account is provided below.

ÍST TS 310:2020

Listing 4.2: Example result of a transaction detail query. TODO: Provide Icelandic Example in YAML

```
1      {
2        "account": {"iban": "DE2310010010123456788" },
3        "transactions":
4          {
5            "booked":
6              [{
7                "transactionId": "1234567",
8                "creditorName": "John Miles",
9                "creditorAccount": {"iban": "DE67100100101306118605"},
10               "transactionAmount": {"currency": "EUR", "amount": "
11                 256.67"},
12               "bookingDate": "2017-10-25",
13               "valueDate": "2017-10-26",
14               "remittanceInformationUnstructured": "Example 1"
15             },{
16               "transactionId": "1234568",
17               "debtorName": "Paul Simpson",
18               "debtorAccount": {"iban": "NL76RAB00359400371"},
19               "transactionAmount": {"currency": "EUR", "amount": "
20                 343.01"},
21               "bookingDate": "2017-10-25",
22               "valueDate": "2017-10-26",
23               "remittanceInformationUnstructured": "Example 2"
24             }],
25            "pending":
26              [{
27                "transactionId": "1234569",
28                "creditorName": "Claude Renault",
29                "creditorAccount": {"iban": "
30                  FR7612345987650123456789014"},
31                "transactionAmount": {"currency": "EUR", "amount": "
32                  -100.03"},
33                "valueDate": "2017-10-26",
34                "remittanceInformationUnstructured": "Example 3"
35              }],
36            "_links": {"account": {"href": "/v1/accounts/3dc3d5b3
37              -7023-4848-9853-f5400a64e80f"}}
38          }
39      }
```

5 Confirmation of Funds

The service adds the possibility for IOBWS consumers to query if funds up to a certain amount are available on a payment account, should a payment be initiated. The answer is only valid at the particular point in time it is given and does not imply or include any reservation of said amount. ÍST TS-310 only supports the confirmation of funds request for payment accounts. Card accounts are currently not supported and only included in the OpenAPI schema for compatability with the source framework.

6 Appendix

6.1 Errors

6.2 Mapping from older implementations

Those familiar with previous versions of IOBWS might want to be able to visualise the mapping from the previous fields, over to the new.

6.3 Domestic adaptations of the NextGenAPI framework

As mentioned, one of the guiding principles for ÍST TS-310 was to make the specification for domestic payments and accounts easy to compare against the original Berlin Group NextGenPSD2 document, and its future versions. In the first iteration of version 3.0, the OpenAPI definition however involved cards and currencies, making the overall contract even more complex than the original. The base was then referencing NextGenPSD2 version 1.3.6 but though upgrading to 1.3.8 was desired, it had turned out to be a considerable task. To facilitate maintenance of the specification throughout minor version updates, as well as simplifying implementations of IOBWS, the cards and currencies APIs were split into their own separate contracts, and the domestic adaptations reworked on top of an intact version 1.3.6. This approach was then validated, by upgrading to NextGenPSD2 version 1.3.8 without undue roadblocks.

To make it even easier to do see the deltas in e.g. text comparison tools, localized version of the source NextGenAPI specifications are stored in appropriate “Stuðningsefni/Berlin-group/v.1.3.8” folder. Alongside that document, there was created an intermediary document with some of the most common and repeated adaptations. The relationship between these documents looks like the following, though the actual filenames are longer:

```
psd2-api 1.3.8 <|-- psd2-api 1.3.8 localized <|-- IOBWS3.0.yaml
```

The ‘localized’ document makes comparison in the final IOBWS3.0.yaml more transparent but in

ÍST TS 310:2020

the following sections we further breakdown *all adaptations* made for Icelandic payments and accounts:

6.3.1 The localized file

Changes between “psd2-api 1.3.8 2020-12-14v2.yaml” and “psd2-api 1.3.8 2020-12-14v2-localized.yaml” (see Stuðningsefni/Berlin-group/v.1.3.8) . - Tag “Common Services” was removed completely, both the definition and all usage in Tags. - Tags on Consents services changed from “Account Information Service (AIS)” to “Consent Service” - “Signing Baskets (SBS)” Tag renamed to “Signing Baskets Service (SBS)”

The IOWBS3.0 specification document

Changes between “psd2-api 1.3.8 2020-12-14v2-localized.yaml” and “IOBWS3.0.yaml” (see final in /Deliverables).

Services:

- Path: “/v1/accounts”
 - Query Parameter: WithCreditLimitQuery - added
 - Header Parameter: ConsentId changed from Required to Optional
 - Path: “/v1/accounts/{account-id}”
 - Query Parameter: WithCreditLimitQuery - added
 - Header Parameter: ConsentId changed from Required to Optional
- Path: “/v1/accounts/{account-id}/balances”
 - Header Parameter: ConsentId changed from Required to Optional
 - Path: “/v1/accounts/{account-id}/transactions”
 - Header Parameter: ConsentId changed from Required to Optional
- Path: “/v1/accounts/{account-id}/transactions/{transactionId}”
 - Header Parameter: ConsentId changed from Required to Optional
- Path: “/v1/card-accounts”
 - Query Parameter: WithCreditLimitQuery - added
 - Header Parameter: ConsentId changed from Required to Optional
- Path: “/v1/card-accounts/{account-id}”
 - Query Parameter: WithCreditLimitQuery - added
 - Header Parameter: ConsentId changed from Required to Optional

ÍST TS 310:2020

- Path: “/v1/card-accounts/{account-id}/balances”
 - Header Parameter: ConsentId changed from Required to Optional
- Path: “/v1/card-accounts/{account-id}/transactions”
 - Header Parameter: ConsentId changed from Required to Optional
- Path: “/v1/{payment-service}/{payment-product}”
 - Only json, domestic types listed as ‘oneOf’ the accepted products
 - Header Parameter: Idempotency-Key - added

Components:

- paymentInitiation:
 - oneOf:
 - * #/components/schemas/paymentInitiationDomestic_json - Added
 - * #/components/schemas/periodicPaymentInitiationDomestic_json - Added
 - * #/components/schemas/bulkPaymentInitiationDomestic_json - Added
- accountDetails
 - creditLimit - added
- transactions:
 - transactionTimestamp - added
 - description - added
 - ultimateCreditorId - added
 - debtorId - added
 - ultimateDebtorId - added
 - icelandicPurpose - added
- cardTransaction:
 - posEntryMode - added

Schema types added for domestic payments and account information: - ultimateDebtorId - ultimateCreditorId - partialPayment - posEntryMode - bank - transactionFeesList - transactionFeesDetail - icelandicPurpose - centralBankPurpose - bicfiOrIdentification

Request bodies added for Domestic objects: - paymentInitiationDomestic_json - periodicPaymentInitiationDomestic_json - bulkPaymentInitiationDomestic_json - paymentInitiationBulkElementDomestic_jsonResponse added - paymentInitiationPaymentIdResponse-200_json