Onboarding - Debt information from financial institutions/Service providers

API-onboarding

Version: 0.1

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1 Introduction

This document is not the technical standard, but an onboarding guide for financial institutions (FI) and service providers (SP) and Gjeldsregisteret AS to exchange information about debt. This document is not a complete implementation guide, only an addition document to the standard document.

1.1 Purpose of this document

The purpose of this document is to describe a standard onboarding guide to push and pull data between financial institutions and Gjeldsregisteret AS.

1.2 Audience

The audience for this document is financial institutions, service providers and Gjeldsregisteret AS

1.3 Dictionary

Short name	Full name	Description
FI (FIs - multiple)	Financial Institution(s)	The owner of the customer data and the unit responsible for delivering data.
SP (SPs - multiple)	Service Provider(s)	The provider that can deliver data on behalf of the FI. FI can be its own SP
DIC	Debt Information Company	Gjeldsregisteret AS The responsible unit for receiving data and distributing this further to the market

1.4 Table of Contents

2 Document Information

2.1 Revision History

Changelog is available in appendix E.

Version	Status	Date	Editor
V0p1	Extended with several examples as well as clarification of some points	14.12.2018	Thore, Reidar

2.2 Reference Documents

ID	Document
[1]	API - Debt information from financial institutions v1p1.docx Security1.1.docx

2.3 Latest version of the document

Latest version of this document may be obtained by contacting Gjeldsregisteret AS.

3 Interfaces

This document defines the interfaces FI/SP and Gjeldsregisteret AS are required to implement to provide debt information according to law about debt information. All services are defined as RESTful web services. The interfaces will be available over Internet.

3.1 Web service interface

This section defines the web services required to be implemented by FI/SP to support DIC.

3.1.1 URL

The URL for each service will be based on the following format: https://host:port/serviceName/version/path

Where the service name is defined as: **debt-information**

The version is defined as: **v1**

The path is defined for each of the services below.

A portal may provide different addresses for push of all data versus updates.

3.1.2 API Services provided by FI/SP – for batch

The table below lists the services for this interface. UTF-8 shall be used as a charset and "application/json" shall be supported as content type.

Method	Path	Description
GET	/loans/	Get debt information for all FIs from a SP
GET	/loans/{financialinstitutionid}	Get debt information for all customers for one FI

Get information about all customers (/loans/)

Get all debt information from the Service provider. Pre-processed files could be created in advance based on file size.

In cases where FI/SP is required to use paging functionality, the number of pages shall be returned as a header parameter in the response from service provider.

Get information about all customers (/loans/{financialinstitutionid}) for a financial institution

Get all debt information for a single FI. A pre-processed file or real-time generated data should be returned.

In cases where FI is required to use paging functionality, the number of pages shall be returned as a header parameter in the response from FI.

Path and query parameters:

Parameter	Description
	None parameter, indicates that the service will returns all data from the FI/SP
financialinstitutionid	Optional path parameter to identify the FI the query is targeted at. Multiple FIs may be included in the response, if financialinstitutionid is not included in the request. **Example:** /loans/999777888
page	Query parameter used to specify the page request, if FI/SP is required to use paging functionality (FUNC-06). Optional parameter, default value is 0. Pages are numbered from 0. Example. If numberOfPages are 10, they are numbered as [0..9]

Response Headers:

Response Header	Description
numberOfPages	Defines the number of pages that can be fetched from the FI. Used in the http response only. If not specified the number of pages is one page.

Request body: Not applicable for method "GET".

Response body: Defined in chapter **Error! Reference source not found.** if successful, when error model in chapter **Error! Reference source not found.**.

Response codes:

Code	Description
200	Default response code
400	Invalid input data
401	Authentication is missing or not correct
403	Not allowed to access resource
429	Too many requests

3.1.3 API Services provided by portal - DIC – for realtime messages

The table below defines the services that the DIC must provide to the FIs. UTF-8 shall be used as a charset and "application/json" shall be supported as content type.

Method	Path	Description
POST	/loans	Post notification about changes in a customer's debt information

Push updates (/loans)

Pushes updates from the FI/SP to the DIC .

Request body: Defined in the standard document.

Response body: Defined in the standard document .

Response codes:

Code	Description
200	Default response code
400	Invalid input data
401	Authentication is missing or not correct
403	Not allowed to access resource
429	Too many requests

4 Use-cases for exchange of debt information

The following use-cases for DIC and FI/SP are included in this onboarding guide:

- DIC fetches information from one FI/SP
- DIC fetches information about all FIs and associated customers
- FI/SP: Loan/credit is new or changed
- FI/SP: Loan or credit is repaid
- FI/SP: Balance or interest is changed

4.1 DIC fetches information about all customers from one FI/SP

Description: DIC fetches information about all customers for one FI by calling service /loans/{financialinstitutionid} at FI/SP.

Pre-condition: FI/SP Onboarding has prepared a data set that is ready each night or real-time generated data.

Procedure: DIC sends request to FI/SP, FI/SP responds with data.

Error procedure:

- DIC resends request, if request times out.

Post-condition: DIC have information about all customers

4.1.1 Example

Request

```
GET /loans/123456789

Accept: application/json
Accept-Encoding: deflate
```

Response

```
200 OK

Content-Type: application/json
Encoding: deflate

{
      "providerID" : "9908:999888777",
      "customers" : [{
            <<<Data about all customer>>>
            }]
      }]
}
```

4.1.2 Example – with paging

Request

```
GET /loans/123456789?page=0

Accept: application/json
Accept-Encoding: deflate
```

Response

```
200 OK

Content-Type: application/json
Encoding: deflate
numberOfPages: 1

{
      "providerID" : "9908:999888777",
      "customers" : [{
            <<<Data about all customer>>>
            }]
      }]
}
```

4.2 DIC fetches information about all financial institutions and associated customers

Description: DIC fetches data about all FIs from a SP or the FI provides its own data. In this context the FI will be handled with the same premises as an SP. By calling service /loans/ at FI/SP.

Pre-condition: SP has prepared a data set that contains data for all FIs they provide each night.

Procedure: DIC sends request to FI/SP, FI/SP responds with data.

Error procedure:

- DIC resends request, if request times out.

Post-condition: DIC have information about all FIs and associated customers.

4.2.1 Example – with paging

Request

```
GET /loans/?page=0

Accept: application/json
Accept-Encoding: deflate
```

Response

```
200 OK

Content-Type: application/json
Encoding: deflate
numberOfPages: 1

{
      "providerID" : "9908:999888777",
      "customers" : [
            {
            "customerID" : "32021112345",
            "financialInstitutionID" : "998877665",
            "loans" : []
            },
            {
            "customerID" : "32021112345",
            "financialInstitutionID" : "999555221",
            "loans" : []
            },
            {
            "customerID" : "38157022556",
            "financialInstitutionID" : "998554221",
            "loans" : []
            }

            <<<Data for more FIs and customers>>>
      ]
}
```

4.3 FI/SP: Loan/credit is new or changed

Description: A new loan/credit and changes to an existing loan/credit shall be **reported by the FI/SP to DIC** in near real-time. The uses case includes reporting of new credit when FI/SP gets new customer.

Pre-condition: A new loan or credit limit has been granted by a FI/SP to a customer.

Procedure: The loan is reported from the FI/SP to DIC

Error procedure:

- If request times out or success response is not received: FI/SP resends request each ten minutes until response is received or until a complete dataset is created and fetched by the DIC (as in fetches examples above).

Post-condition: DIC is informed that a credit limits was changed, a customer got a new credit, or that a new customer was granted credit or loan.

4.3.1 Example

Request

```
POST /loans

Content-Type: application/json

{
      "providerID" : "9908:123456789",
      "customers" : [
            {
            "customerID" : "32021112345",
            "financialInstitutionID" : "123456789",
            "loans" : [{
                  "type" : "creditFacility",
                  "timestamp" : "2018-04-09T10:13:12Z",
                  "accountID" : "4001",
                  "accountName" : "Kort",
                  "creditLimit" : "10000000",
                  "interestBearingBalance" : "0",
                  "nonInterestBearingBalance" : "0",
                  "nominalInterestRate" : "0800",
                  "installmentCharges" : "0",
                  "installmentChargePeriod" : "MONTHLY",
                  "coBorrower" : "0"
                  }]
            },
            {
            "customerID" : "32057563214",
            "financialInstitutionID" : "987654321",
            "loans" : [{
```

```
                "type" : "chargeCard",
                "timestamp" : "2018-04-09T10:13:16Z",
                "accountID" : "52",
                "accountName" : "Kort",
                "interestBearingBalance" : "0",
                "nonInterestBearingBalance" : "12500",
                "coBorrower" : "0"
                }]
          }]
}
```

Response

```
200 OK

Content-Type: application/json

{
     "timestamp" : "2018-04-09T10:13:12Z",
     "uuid" : "e180341c-13e5-4a42-a835-0ef4be5320fc"
}
```

4.4 FI/SP: Loan or credit is repaid

Description: This use cases is related to reporting of a loan that has been repaid, shall be **reported by the FI/SP to DIC** in near real-time

Pre-condition: A previously reported loan or credit is repaid.

Procedure: The loan is reported to the DICs with a credit limit/balance set to zero.

Error procedure:

- If request times out or success response is not received: FI/SP resends request each ten minutes until response is received or until a complete dataset is created and sent to DIC.

Post-condition: DICs have received information about repaid loan or credit.

4.4.1 Example

Request

```
POST /loans

Content-Type: application/json

{
     "providerID" : "9908:123456789",
     "customers" : [{
```

```
            "customerID" : "32021112345",
            "financialInstitutionID" : "123456789",
            "loans" : [
            {
                  "type" : "creditFacility",
                  "timestamp" : "2018-04-09T10:15:52Z",
                  "accountID" : "4001",
                  "accountName" : "Kort",
                  "creditLimit" : "0",
                  "interestBearingBalance" : "0",
                  "nonInterestBearingBalance" : "0",
                  "nominalInterestRate" : "0",
                  "installmentCharges" : "0",
                  "installmentChargePeriod" : "MONTHLY",
                  "coBorrower" : "0"
            },{
                  "type" : "chargeCard",
                  "timestamp" : "2018-02-05T12:54:11Z",
                  "accountID" : "52",
                  "accountName" : "Kort",
                  "interestBearingBalance" : "0",
                  "nonInterestBearingBalance" : "0",
                  "coBorrower" : "0"
            },{
                  "type" : "repaymentLoan",
                  "timestamp" : "2018-02-05T12:59:32Z",
                  "accountID" : "31",
                  "accountName" : "Forbrukslån 100%",
                  "originalBalance" : "0",
                  "balance" : "0",
                  "terms" : "0",
                  "nominalInterestRate" : "0",
                  "installmentCharges" : "0",
                  "installmentChargePeriod" : "MONTHLY",
                  "coBorrower" : "0"
            }]
      }]
}
```

Response

```
200 OK

Content-Type: application/json

{
      "timestamp" : "2018-04-09T10:15:52Z",
      "uuid" : "986cbe27-1f00-45c6-8baf-c6de97dffdbf"
}
```

4.5 FI/SP: Balance or interest is changed

Description: The balance or interest has been changed for a loan or credit.

Pre-condition: FI/SP has previously reported data about the customer.

Procedure: Data is reported in the next complete data set that will be available latest during the next night.

Error procedure: N/A

Post-condition: Updated balance or interest is included in the next complete data set.

5 Configuration of FIs and SPs

There are multiple ways that data will be reported based on many organizations within a FI, use of SP and multiple systems. This affects how the data is reported and how certificates and data shall be reported is outlined below. We see the following main setups:

- **Case A:** One FI (or service provider) reports for only one organization
- **Case B:** One FI (or service provider) reports for multiple organizations

Some principles are defined for reporting:

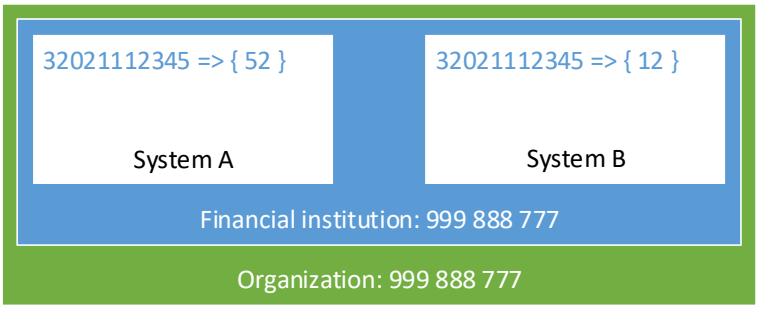
- A FI is responsible for aggregating data from all internal systems before that is sent to the DIC. Data from a FI may be delivered from different providers. Each provider must have its own certificate and providerID (**Example 1 and example 1,1**).
- The customer array in the reported data may come from multiple FIs. A unique instance of the customer for each FI shall exist. The loans array of a customer object shall not contain data from multiple FIs. (**Example 2**).
- The serial number of the certificate shall be the organization number for the FI/SP. (**Example 3**).
- The customer array in the reported data may come from multiple FIs/SPs and multiple systems. A unique instance of the customer for each FI shall exist, containing data for all systems used by the FI. The loans array of a customer object shall not contain data from multiple FIs **(Example 4)**.

5.1 Example 1

This example illustrates how a FI shall report data when information about debt is stored in multiple systems.

Overview

The ID's used in the figure is customer ID and account ID. The white boxes are system within a FI, and the green box reports the organization reporting the data on behalf of the FI.



Message

```
{
      "providerID" : "9908:999888777",
      "customers" : [{
            "customerID" : "32021112345",
            "financialInstitutionID" : "999888777",
            "loans" : [{
                  "type" : " creditFacility",
                  "timestamp" : "2018-02-05T12:54:12Z",
                  "accountID" : "12",
                  "accountName" : "Kort",
                  "creditLimit" : "10000000",
                  "interestBearingBalance" : "5000000",
                  "nonInterestBearingBalance" : "0",
                  "nominalInterestRate" : "0800",
                  "installmentCharges" : "5000",
                  "installmentChargePeriod" : "MONTHLY",
                  "coBorrower" : "0"
            }, {
                  "type" : "chargeCard",
                  "timestamp" : "2018-02-05T12:54:11Z",
                  "accountID" : "52",
                  "accountName" : "Kort",
                  "interestBearingBalance" : "0",
                  "nonInterestBearingBalance" : "12500",
                  "coBorrower" : "0"
            }]
      }]
}
```

Example 1,1

This example illustrates how a FI shall report data when information about debt is stored in multiple systems, and this is delivered from several providers.

Message

```
{
      "providerID" : "9908:777999888",
      "customers" : [{
            "customerID" : "32021112345",
            "financialInstitutionID" : "999888777",
            "loans" : [{
                  "type" : " creditFacility",
                  "timestamp" : "2018-02-05T12:54:12Z",
                  "accountID" : "12",
                  "accountName" : "Kort",
                  "creditLimit" : "10000000",
                  "interestBearingBalance" : "5000000",
                  "nonInterestBearingBalance" : "0",
                  "nominalInterestRate" : "0800",
                  "installmentCharges" : "5000",
                  "installmentChargePeriod" : "MONTHLY",
                  "coBorrower" : "0"
            }]
      }]
}
```

Message

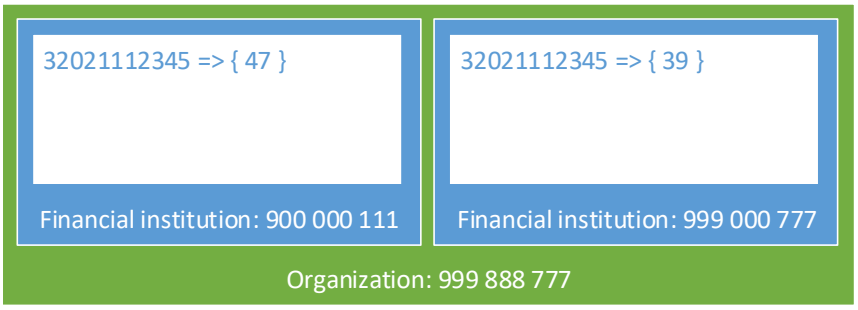
```
{
      "providerID" : "9908:888777999",
      "customers" : [{
            "customerID" : "32021112345",
            "financialInstitutionID" : "999888777",
            "loans" : [{
                  "type" : "chargeCard",
                  "timestamp" : "2018-02-05T12:54:11Z",
                  "accountID" : "52",
                  "accountName" : "Kort",
                  "interestBearingBalance" : "0",
                  "nonInterestBearingBalance" : "12500",
                  "coBorrower" : "0"
            }]
      }]
}
```

5.2 Example 2

This example illustrates how data shall be reported from multiple FIs.

Overview

The ID's used in the figure is customer ID and account ID. The white boxes are system within a FI, and the green box reports the organization (SP) reporting the data on behalf of the FI.



Message

```
{
      "providerID" : "9908:999888777",
      "customers": [{
            "customerID" : "32021112345",
            "financialInstitutionID" : "900000111",
            "loans" : [{
                  "type" : "creditFacility",
                  "timestamp" : "2018-02-05T12:54:12Z",
                  "accountID" : "47",
                  "accountName" : "Kort",
                  "creditLimit" : "500000",
                  "interestBearingBalance" : "10000",
                  "nonInterestBearingBalance" : "2000",
                  "nominalInterestRate" : "1200",
                  "installmentCharges" : "5000",
                  "installmentChargePeriod" : "MONTHLY",
                  "coBorrower" : "0"
            }]},{
            "customerID" : "32021112345",
            "financialInstitutionID" : "900000777",
            "loans" : [{
                  "type" : "creditFacility",
                  "timestamp" : "2018-02-05T12:54:12Z",
                  "accountID" : "39",
                  "accountName" : "Kort",
                  "creditLimit" : "500000",
                  "interestBearingBalance" : "50000",
                  "nonInterestBearingBalance" : "1000000",
                  "nominalInterestRate" : "1200",
                  "installmentCharges" : "5000",
```

```
                "installmentChargePeriod" : "MONTHLY",
                "coBorrower" : "0"
            }]
      }]
}
```

5.3 Example 3

This example shows how the serialnumber of the certificate shall be the organizationnumber for the provider, and that last part of providerID is the organizationnumber.

Certificate

```
CN = xyz.no
O = XYZ AS
L = Oslo
C = NO
SERIALNUMBER = 999 888 777
```

Message

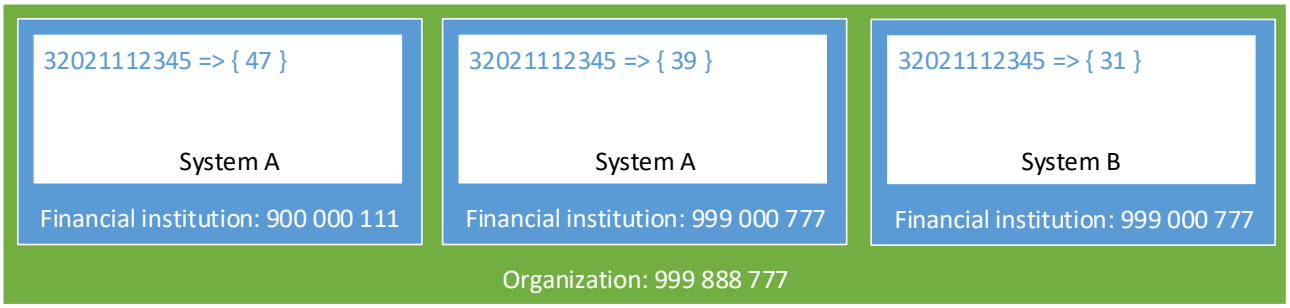
```
{
      "providerID" : "9908:999888777",
      "customers" : [{
            "customerID" : "32021112345",
            "financialInstitutionID" : "123456789"
      ...
}
```

5.4 Example 4

This example illustrates how a group of banks may report data, using multiple systems.

Overview

The ID's used in the figure is customer ID and account ID. The white boxes are system within a The responsible unit for receiving data and distributing this further to the marketFI, and the green box reports the organization reporting the data on behalf of the SP.



Message

```
{
      "providerID" : "9908:999888777",
      "customers": [{
            "customerID" : "32021112345",
            "financialInstitutionID" : "900000111",
            "loans" : [{
                  "type" : "creditFacility",
                  "timestamp" : "2018-02-05T12:54:12Z",
                  "accountID" : "47",
                  "accountName" : "Kort",
                  "creditLimit" : "500000",
                  "interestBearingBalance" : "10000",
                  "nonInterestBearingBalance" : "2000",
                  "nominalInterestRate" : "1200",
                  "installmentCharges" : "5000",
                  "installmentChargePeriod" : "MONTHLY",
                  "coBorrower" : "0"
            }]},{
            "customerID" : "32021112345",
            "financialInstitutionID" : "900000777",
            "loans" : [{
                  "type" : "creditFacility",
                  "timestamp" : "2018-02-05T12:54:12Z",
                  "accountID" : "39",
                  "accountName" : "Kort",
                  "creditLimit" : "500000",
                  "interestBearingBalance" : "50000",
                  "nonInterestBearingBalance" : "1000000",
                  "nominalInterestRate" : "1200",
```

```
                "installmentCharges" : "5000",
                "installmentChargePeriod" : "MONTHLY",
                "coBorrower" : "0"
          },{
                "type" : "repaymentLoan",
                "timestamp" : "2018-02-05T12:59:32Z",
                "accountID" : "31",
                "accountName" : "Forbrukslån 100%",
                "originalBalance" : "50000",
                "balance" : "20000",
                "terms" : "20",
                "nominalInterestRate" : "1200",
                "installmentCharges" : "0",
                "installmentChargePeriod" : "MONTHLY",
                "coBorrower" : "0"
          }]
     }]
}
```