Interface - Debt information from financial institutions

API-DEBT-FI

Version: 1.2.0

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1 Introduction

This document is the technical specification for financial institutions (FI) and debt portals/debt data registers (Debt Information Companies, **DIC**) to exchange information about debt. The technical specification is defined by Norsk Gjeldsinformasjon AS, Gjeldsregisteret AS and Experian Gjeldsregister AS.

The technical specification is created to ensure that the financial institutions does not need to adhere to multiple technical standards. The regulations for Debt Information Companies opens for multiple Debt Information Companies. The objective is that all communication of debt information between financial institutions and Debt Information Companies shall be based on this standard.

1.1 Purpose of this document

The purpose of this document is to describe a standard to push and pull data between financial institutions and Debt Information Companies. This document describes data format, interfaces and requirements for the interfaces provided by the financial institutions. The intention is to support FOR-2017-10-31-1691, §3.

The standard will only cover the interface to provide debt information from the financial institutions to the Debt Information Company. Other interfaces related to the Debt Information Company is not in scope.

Debt Information Companies may be established with different architectures, appendix A lists use cases that the standard aims to solve.

1.2 Audience

The audience for this document is financial institutions, service providers and Debt Information Companies.

1.3 Table of Contents

2 Document Information

2.1 Revision History

Version	Status	Date	Editor
v1p0	First version	27.04.2018	E. Bergersen
v1p1	Approved by Gjeldsregisteret AS and Norsk Gjeldsinformasjon AS	20.09.2018	F. Standal
v1p1p1	Approved by Gjeldsregisteret AS and Norsk Gjeldsinformasjon AS	17.01.2019	F. Standal
v1p1p2	Approved by Gjeldsregisteret AS and Norsk Gjeldsinformasjon AS	14.03.2019	Anne Høymyr
V1p1p3	Approved by Gjeldsregisteret AS and Norsk Gjeldsinformasjon AS	02.05.2019	Anne Høymyr
V1.2.0	Approved by Gjeldsregisteret AS, Experian Gjeldsregister AS and Norsk Gjeldsinformasjon AS	11.06.2020	Bjørn Horsdal

2.2 Reference Documents

ID	Document
[1]	Lov om gjeldsinformasjon ved kredittvurdering av privatpersoner (gjeldsinformasjonsloven) https://lovdata.no/dokument/NL/lov/2017-06-16-47
[2]	Forskrift om virksomhet etter gjeldsinformasjonsloven (gjeldsinformasjonsforskriften) https://lovdata.no/dokument/SF/forskrift/2017-10-31-1691
[3]	Begrepsdefinisjoner – Tilgjengeliggjøring av gjeldsinformasjon
[4]	Security - Debt information from financial institutions

2.3 Latest version of the document

Latest version of this document may be obtained by contacting Norsk Gjeldsinformasjon AS, Gjeldsregisteret AS or Experian Gjeldsregister AS.

3 Interfaces

This document defines the interfaces financial institutions and Debt Information Company are required to implement to provide debt information according to law about debt information [1]. The interfaces must be implemented towards all Debt Information Companies with authorization. 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 financial institutions. The figure below illustrates the APIs and the actors.

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 financial institutions

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/{financialinstitutionid}	Get debt information for all customers
GET	/loans/{financialinstitutionid}/customer	Get debt information based on social security number (fødselsnummer) or D-number.
GET	/ssn/{financialinstitutionid}	Returns SSN of all customers

Get information about all customers (/loans/{financialinstitutionid})

Get all debt information from the financial institution. A pre-processed file will be retrieved from the financial institution.

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
financialInstitutionID	Optional path parameter to identify the FI the query is targeted at. Multiple financial institutions may be included in the response, if this identifier is not included in the request. **Example**: /loans/999777888
page	Query parameter used to specify the page request, if FI 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 4.2 if successful, when error model in chapter 4.4.

Response codes:

Code	Description
200	Default response code
403	Not allowed to access resource
413	Payload too large

Get SSN information about all customers (/ssn/{financialinstitutionid})

Get SSN for all customers of the financial institution. A pre-processed file will be retrieved from the financial institution. The intention of this endpoint is to lighten the load and save bandwidth for both the DIC and the FI for the cases where the DIC builds an internal index register as described in .

Path parameters:

Parameter	Description
financialInstitutionID	Mandatory path parameter to identify the FI the query is targeted at. **Example:** /ssn/999777888

Request body: Not applicable for method "GET".

Response body: Defined in chapter 4.5 if successful, when error model in chapter 4.4.

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

Get information based on social security number (/loans/{financialinstitutionid}/customer)

Social security number or D-number is added as a header parameter, defined as customerID.

Header parameters:

Parameter	Description
customerID	Social security number or D-number. Parameter is required and shall be 11 digits. Field is used as a primary key.

Path parameters:

Parameter	Description
financialInstitutionID	Mandatory path parameter to identify the FI the query is targeted at. **Example:** /loans/999777888/customer

The HTTP body shall contain the following information:

Request body: Not applicable for method "GET".

Response body: The response body is defined in chapter 4.2. If error, the model in chapter 4.4 is sent.

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

The table below defines the services that the Debt Information Company must provide to the financial institutions. 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 financial institution to the Debt Information Company.

Request body: Defined in chapter 4.2.

Response body: Defined in chapter 4.3 if successful, when error model in chapter 4.4.

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 Data format

This chapter defines the data formats used in requests and responses. A schema is defined for the objects.

4.1 Format conventions

The table below lists the formats used to define the data model.

Format	Description
N	Only numeric characters are valid
AN	Alphanumeric characters and space are valid
A	Only alphabetic characters are valid.
TXT	All printable ASCII characters are valid.
OBJECT	Only a defined data object is valid.
ENUM	A defined set of values are valid.
DATETIME	ISO8601 data time. E.g. 2018-02-05T12:54:12Z

4.2 Data model for debt

This section defines the data model used for unsecured debt. The same model is reused for all interfaces. The only applicable content type for the data model is JSON.

4.2.1 Organization

Key	Format	Use	Description
providerID	TXT	Mandatory	Identifier of the financial institution or their service provider. Shall be matched against the organization number in the certificate. Organization number shall be reported according to ISO 6523.
customers	Object (4.2.2)	1..n	Required for message.

4.2.2 Customer

Key	Format	Use	Description
customerID	N11	Mandatory	11 digits identifier of the customer either as 'Fødselsnummer' or 'D-number'.
financialInstitutionID	TXT	Mandatory	Organization number of the financial institution. Nine digits as defined in Brønnøysundregistrene or non-norwegian financial id with country code prefix. **Example:** Norwegian FI: 998877666 Foreign FI: 0192:998866666 Foreign FIs are required to report their financialInstitutionID to one of the DICs, which will include it in Appendix E in this specification.
loans	AnyOf (4.2.3, 4.2.4, 4.2.5)	0..n	Array of repayment loans, credit facilities and charge cards. Loan type is defined by the property "type".

4.2.3 Repayment loans

Loan type is: “repaymentLoan”

Key	Format	Use	Description
timestamp	DATETIME	Mandatory	Timestamp for when the data payload was extracted from the system and processed in this object. Do not use the timestamp for the last account transaction/movement.
accountID	N25	Mandatory	Anonymous identifier for the loan, shall be unique for the FI.
accountName	TXT	Optional	Name of account, product or other text recognizable for the customer.
originalBalance	N12	Mandatory	The original amount of the loan from the date the loan was granted. Amount defined in NOK. If the balance is negative (FI owes customer money), a balance of 0 should be reported. **Example:** 100 NOK encoded as 10000
balance	N12	Mandatory	The balance for the repayment loan. Amount defined in NOK. If the balance is negative (FI owes customer money), a balance of 0 should be reported. **Example:** 100 NOK encoded as 10000
terms	N3	Mandatory	Remaining terms for the repayment loan in months.
nominalInterestRate	N6	Mandatory	The nominal interest rate of the repayment loan. **Example:** 10.20 % is encoded as 1020.
installmentCharges	N12	Mandatory	Installment charges related to the loan. **Example:** 100 NOK encoded as 10000
installmentChargePeriod	TXT	Mandatory	MONTHLY. Charges must be reported as a monthly charge/fee. Those using other intervals must recalculate to a monthly charge and report this. **Example:** Quarterly charges of 300 NOK should be reported as: 300 NOK divided by 3 months = 100 NOK monthly charges. If there is a combination of monthly and other (twice a year, yearly etc.), add up to yearly, and divide by 12 months.
coBorrower	N1	Mandatory	“2”=Has co-borrower “1”=Is co-borrower “0”= No

4.2.4 Credit Facilities

Loan type is: “creditFacility”

Key	Format	Use	Description
timestamp	DATETIME	Mandatory	Timestamp for when the data payload was extracted from the system and processed in this object. Do not use the timestamp for the last account transaction/movement.
accountID	N25	Mandatory	Identifier for the account (loan), the value shall be either an account number or a KID number. In case of card number, these shall be reported masked according to PCI DSS.
accountName	TXT	Optional	Name of account, product or other text recognizable for the customer.
creditLimit	N12	Mandatory	The maximum credit for the loan. Amount defined in NOK. **Example:** 100 NOK encoded as 10000
interestBearingBalance	N12	Mandatory	The interest-bearing balance for the credit facility. Amount defined in NOK. If the balance is negative (FI owes customer money), a balance of 0 should be reported. **Example:** 100 NOK encoded as 10000
nonInterestBearingBalance	N12	Mandatory	The non-interest-bearing balance for the credit facility. Non-interest-bearing balance is calculated by subtracting interest-bearing balance from booked balance. Amount defined in NOK. If the balance is negative (FI owes customer money), a balance of 0 should be reported. **Example:** 100 NOK encoded as 10000
nominalInterestRate	N6	Mandatory	The nominal interest rate of the credit facility. **Example:** 10.20 % is encoded as 1020.
installmentCharges	N12	Mandatory	Instalment charges related to the credit facility. **Example:** 100 NOK encoded as 10000
installmentChargePeriod	TXT	Mandatory	MONTHLY. Charges must be reported as a monthly charge/fee. Those using other intervals must recalculate to a monthly charge and report this. **Example:** Quarterly charges of 300 NOK should be reported as: 300 NOK divided by 3 months = 100 NOK monthly charges. If there is a combination of monthly and other (twice a year, yearly etc.), add up to yearly, and divide by 12 months.

coBorrower	N1	Mandatory	"2"=Has co-borrower "1"=Is co-borrower "0"= No

4.2.5 Charge cards

Loan type is: "chargeCard"

Key	Format	Use	Description
timestamp	DATETIME	Mandatory	Timestamp for when the data payload was extracted from the system and processed in this object. Do not use the timestamp for the last account transaction/movement.
accountID	N25	Mandatory	Identifier for the account (loan), the value shall be either an account number or a KID number. In case of card number, these shall be reported masked according to PCI DSS.
accountName	TXT	Optional	Name of account, product, or other text recognizable for the customer.
interestBearingBalance	N12	Mandatory	The interest-bearing balance for the credit facility. Amount defined in NOK. If the balance is negative (FI owes customer money), a balance of 0 should be reported. **Example:** 100 NOK encoded as 10000
nonInterestBearingBalance	N12	Mandatory	The non-interest-bearing balance for the credit facility. Non-interest-bearing balance is calculated by subtracting interest-bearing balance from booked balance. Amount defined in NOK. If the balance is negative (FI owes customer money), a balance of 0 should be reported. **Example:** 100 NOK encoded as 10000
coBorrower	N1	Mandatory	"2"=Has co-borrower "1"=Is co-borrower "0"= No

4.2.5 Example

Below follows the structure of a message:

```
{
        providerID: ORGNR

        customers: [
                {
                        customerID : 11 digit SSN or D-number
                        financialInstitutionID : ORGNR

                        loans : [

                        {
                                        type : repaymentLoan
                                        timestamp
                                        accountID
                                        accoutName
                                        originalBalance
                                        balance
                                        terms
                                        nominalInterestRate
                                        installmentCharges
                                        installmentChargePeriod
                                        coBorrower
                        },

                        {
                                        type : creditFacility
                                        timestamp
                                        accountID
                                        accountName
                                        creditLimit
                                        interestBearingBalance
                                        nonInterestBearingBalance
                                        nominalInterestRate
                installmentCharges
                                        installmentChargePeriod
                                        coBorrower
                        },

                        {
                                        type : chargeCard
                                        timestamp
                                        accountID
                                        accountName
                                        interestBearingBalance
                                        nonInterestBearingBalance
                                        coBorrower
                        }
                        ]
                }
        ]
}
```

4.3 Success response

This model defines the default response if a data was successfully received by the Debt Information Company. The only applicable content type for the data model is JSON.

4.3.1 Data model

Key	Format	Use	Description
timestamp	DATETIME	Mandatory	The timestamp for when the message was received.
Uuid	AN36	Mandatory	Unique identifier for the message

4.3.2 Example

```
{
          "timestamp" : "2018-02-05T12:54:12Z",
        "uuid" : "01417c61-b9e9-45b4-8f2d-82167d923f8c"
}
```

4.4 Error response

The model is defined for error messages. The only applicable content type for the data model is JSON.

4.4.1 Data model

Key	Format	Use	Description
errorMessage	TXT	Mandatory	Description of the error
timestamp	DATETIME	Mandatory	The timestamp for when the message was received.
Uuid	AN36	Mandatory	Unique identifier for the message

4.4.2 Example

```
{
   "errorMessage" : "Leveransen ble ikke akseptert",
   "timestamp" : "2018-02-05T12:54:12Z",
   "uuid" : "01417c61-b9e9-45b4-8f2d-82167d923f8c"
}
```

4.5 Data model for SSN

This section defines the data model used for the response when requesting a list of SSNs from a FI.

4.5.1 Data model

Key	Format	Use	Description
providerID	TXT	Mandatory	Identifier of the financial institution or their service provider. Shall be matched against the organization number in the certificate. Organization number shall be reported according to ISO 6523.
financialInstitutionID	N9	Mandatory	Organization number of the financial institution. Nine digits as defined in Brønnøysundregistrene or non-norwegian financial id with country code prefix. **Example:** Norwegian FI: 998877666 Foreign FI: 0192:998866666 Foreign FIs are required to report their financialInstitutionID to one of the DICs, which will include it in Appendix F in this spesification.
timestamp	DATETIME	Mandatory	Timestamp for when the data payload was extracted from the system and processed in this object
customers	Array of string	1..n	Array of string with SSNs.

4.5.2 Example:

```
{
   "providerID" : "9908:123456789",
   "financialInstitutionID" : "999888777",
   "timestamp" : "2018-02-05T12:54:12Z",
   "customers" : [
          "12345678901",
          "23456789012",
          "34567890123"
   ]
}
```

5 Technical requirements

This chapter defines requirements related to functionality and performance and security.

5.1 Functional requirements

This section defines the requirements for the functionality.

#	Requirement
FUNC-01	An updated dataset for all customers shall be available at 5 AM Coordinated Universal Time (UTC).
FUNC-02	Financial institutions shall notify changes in credit lines and repayment loans to all Debt Information Companies within five minutes after the credit or loan was available to the customer. Information about the entire loan shall be reported. **Note:** This also includes when a loan was repaid.
FUNC-03	Each financial institution must be addressable over Internet.
FUNC-04	A request to retrieve data about one customer shall only contain data for one financial institution.
FUNC-05	Test environments shall always be available for financial institutions and Debt Information Companies.
FUNC-06	The financial institutions are required to use paging if the size of the file for all customers are above 100 MB.
FUNC-07	A page when fetching all customers shall be valid JSON-file and a customer shall not be split between two pages.
FUNC-08	A page when fetching all customers shall be at least 50 MB, unless it is the last page.
FUNC-09	The test environment shall support the same functionality, the same security mechanisms and be a replica of the technical infrastructure used in the production environment. The financial institutions must be able to scale up the capacity to production grade when needed by one of the debt information companies.

5.2 Performance and reliability requirements

The section defines the requirements for performance and reliability.

#	Requirement
TECH-01	A financial institution must provide the services with an availability of 99.80 % per month. Between 07-23 on working days, the requirement is 99.90 % per month, using norwegian time and Norwegian working days.
TECH-02	A financial institution shall have a response time of less than 500 milliseconds for 99 % of the requests where data for a specific SSN is requested.
TECH-03	A financial institution must be able to process minimum 50 requests per second, where data for a specific SSN is requested. For cases where a service provider serves several financial institutions, the service provider must scale their system according to their number of customers.
TECH-04	The entire data set for debt information shall be downloadable in less than ten minutes.

5.3 Security requirements

The security requirements are specified in the latest version of the document “Security - Debt information from financial institutions”.

6 Appendix A: Use-cases for exchange of debt information

The following use-cases for Debt Information Companies (DIC) and Financial Institutions (FI) are included in the documentation:

- DIC fetches information about a customer
- DIC fetches SSN about a customer
- DIC fetches information about all customers
- FI: New loan or credit limit
- FI: Changed loan or credit limit
- FI: Repayment loan is repaid
- FI: Charge card or credit facility is repaid
- FI: Balance or interest is changed

6.1 DIC fetches information about a customer

Description: DIC request information about a customer based on a customer's social security number.

Pre-condition: DIC needs to get information about a customer.

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

Error procedure:

- DIC resends request, if request times out.
- FI responds with an empty customer array, if no information exists about the customer.

Post-condition: DIC has information about the customer.

6.1.1 Example

Request

```
GET /loans/123456789/customer

customerID: 30021112345
Accept: "application/json"
```

Response

```
200 OK

Content-Type: "application/json"
{
        "providerID" : "9908:999888777",
        "customers" : [{
                <<<Data about one customer>>>
                }]
        }]
}
```

6.2 DIC fetches information about all customers

Description: DIC fetches information about all customers in the FI.

Pre-condition: FI has prepared a data set that is ready each night.

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

Error procedure:

- DIC resends request, if request times out.

Post-condition: DIC have information about all customers

6.2.1 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>>>
                }]
        }]
}
```

6.2.2 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>>>
                }]
        }]
}
```

6.3 DIC fetches SSN about all customers

Description: DIC fetches SSN about all customers in the FI.

Pre-condition: FI has prepared a data set that is ready each night.

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

Error procedure:

- DIC resends request, if request times out.

Post-condition: DIC have SSN for all FI customers

6.3.1 Example

Request

```
GET /ssn/123456789

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

Response

```
200 OK

Content-Type: application/json
Encoding: deflate

{
   "providerID" : "9908:999888777",
   "financialInstitutionID" : "123456789",
   "timestamp" : "2018-02-05T12:53:12Z",
          "customers" : [
                    "SSN1", "SSN2", "SSN3"
          ]
}
```

6.4 FI: Loan/credit is new or changed

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

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

Procedure: The loan is reported from the FI to DICs

Error procedure:

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

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.

6.4.1 Example

Request

```
POST /loans

Content-Type: application/json

{
	"providerID" : "9908:123456789",
	"customers" : [{
		"customerID" : "32021112345",
		"financialInstitutionID" : "123456789",
		"loans" : [{
			"type" : "creditFacility",
			"timestamp" : "2018-04-09T10:13:12Z",
			"accountID" : "4001",
			"accountName" : "Kort",
			"creditLimit" : "10000000",
			"interestBearingBalance" : "0",
			"nonInterestBearingBalance" : "0",
			"nominalInterestRate" : "000800",
			"installmentCharges" : "0",
			"installmentChargePeriod" : "MONTHLY",
			"coBorrower" : "0"
		}]
	}]
}
```

Response

```
200 OK

Content-Type: application/json

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

6.5 FI: Repayment loan is repaid

Description: This use cases is related to reporting of a loan that has been repaid.

Pre-condition: A previously reported loan is repaid.

Procedure: The loan is reported to the DICs with originalBalance, balance, terms, nominalInterestRate, installmentCharges, installmentChargePeriod and coBorrower set to "0" (zero).

Error procedure:

- If request times out or success response is not received: DIC 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.

6.5.1 Example

Request

```
POST /loans

Content-Type: application/json

{
	"providerID" : "9908:123456789",
	"customers" : [{
		"customerID" : "32021112345",
		"financialInstitutionID" : "123456789",
		"loans" : [{
			"type" : "repaymentLoan",
			"timestamp" : "2018-04-09T10:15:52Z",
			"accountID" : "4001",
			"accountName" : "Forbrukslån",
			"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"
}
```

6.6 FI: Chargecard or credit facility is repaid

Description: This use cases is related to reporting of a debt that has been repaid.

Pre-condition: A previously reported debt is repaid.

Procedure: The debt is reported to the DICs with a interestBearingBalance and nonInterestBearingBalance set to "0" (zero).

Error procedure:

- If request times out or success response is not received: DIC 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 debt.

6.6.1 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" : "4002",
			"accountName" : "Kort",
			"creditLimit" : "5000000",
			"interestBearingBalance" : "0"
			"nonInterestBearingBalance" : "0",
			"nominalInterestRate" : "2160",
			"installmentCharges" : "10000",
			"installmentChargePeriod" : "MONTHLY",
			"coBorrower" : "0"
		}]
	}]
}
```

Response

```
200 OK

Content-Type: application/json

{
	"timestamp" : "2018-04-09T10:15:52Z",
	"uuid" : "986cbe27-1f00-45c6-8baf-c6de97dffdbe"
}
```

6.7 FI: Balance or interest is changed

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

Pre-condition: FI 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

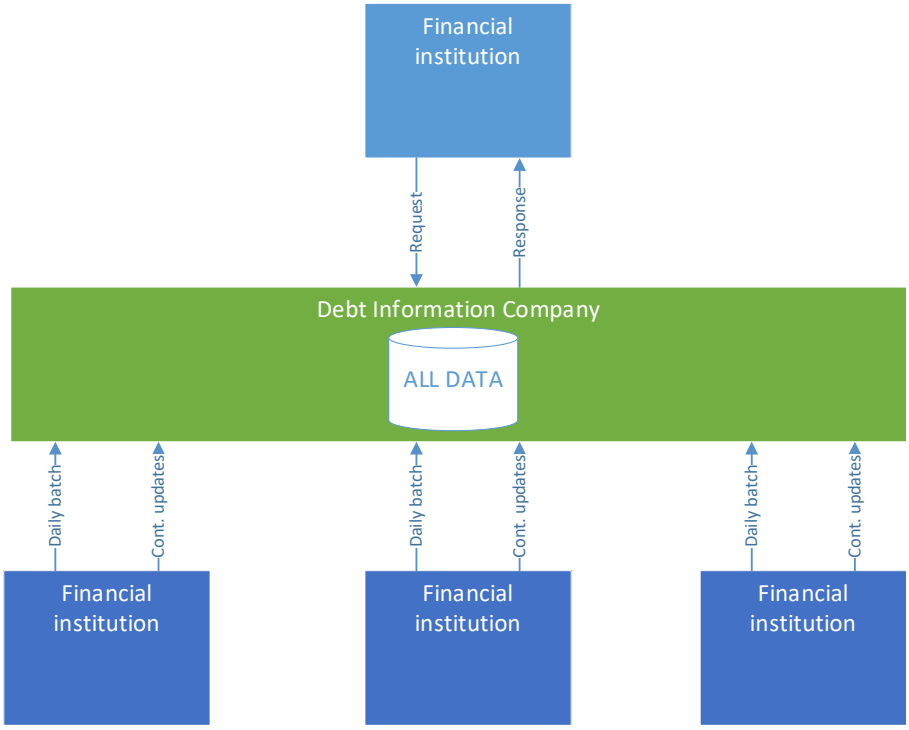
Post-condition: Updated balance or interest is included in the next complete data set.

7 Appendix B: Use-cases for Debt Information Companies

This appendix describes the different solutions the standard supports based on how the Debt Information Companies accesses data from the financial institutions.

7.1 Use case 1: Store all data

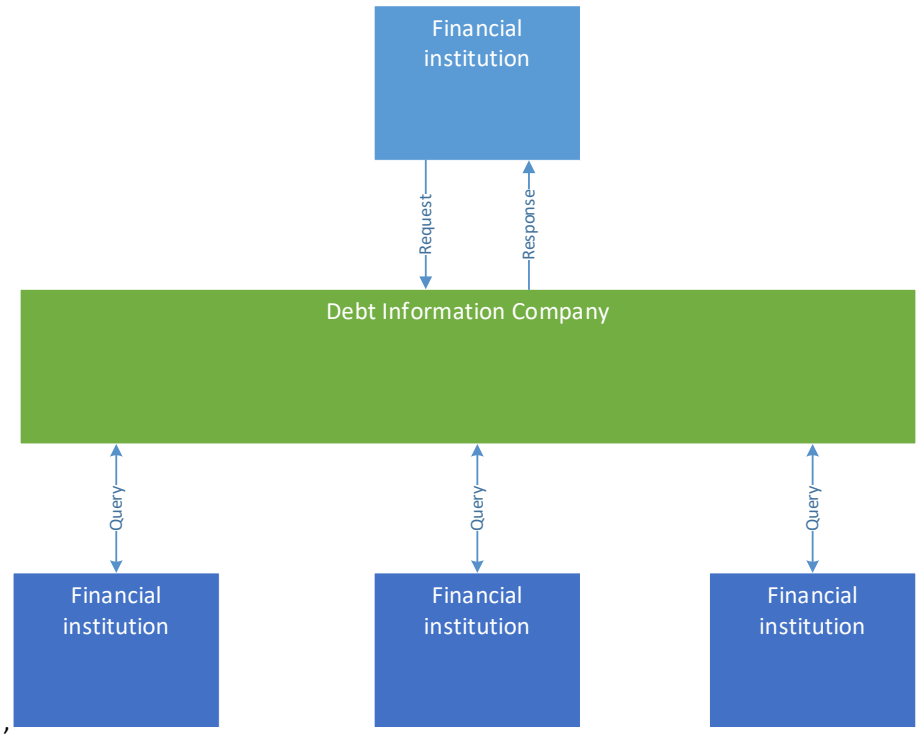
This use case is based on that financial institutions report all data to the Debt Information Company. A set with all is reported nightly, and data is continuously updated throughout the day. The Debt Information Company reports data based on data stored in a local database. A Debt Information Company may also base their data only on the daily batch.



7.2 Use case 2: Query all financial institutions

No data is stored by the Debt Information Company and all financial institutions (or their service provider) are queried for each request for debt information.

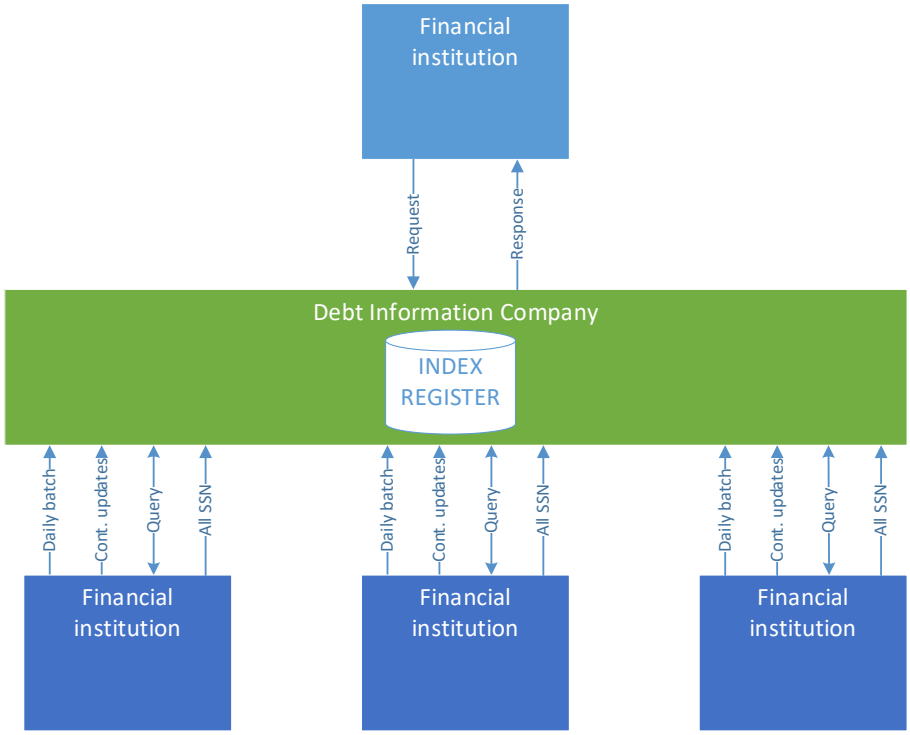
Note: The Debt Information Company will need to use the “batch-interface” to get information needed for governmental entities and for response to financial institution that require information for all their customers to create credit score models. The data will need to be stored temporarily for this purpose.



7.3 Use case 3: Index register where only related financial institutions are queried

The Debt Information Company builds an index register based on the data reported by nightly and the data reported throughout the day. Some variations of this use case exist, one is that some data is stored by the Debt Information Company in case of unavailability, or that the index is only built based on the nightly batch.

Note: The Debt Information Company will need to use the “batch-interface” to get information needed for governmental entities and for response to financial institution that require information for all their customers to create credit score models. The data will need to be stored temporarily for this purpose.



8 Appendix C: Configuration of financial institutions and service providers

There are multiple ways that data will be reported based on many organizations within a financial institution, use of service providers 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:

1. **Case A:** One financial institution (or service provider) reports for only one organization
2. **Case B:** One financial institution (or service provider) reports for multiple organizations

Some principles are defined for reporting:

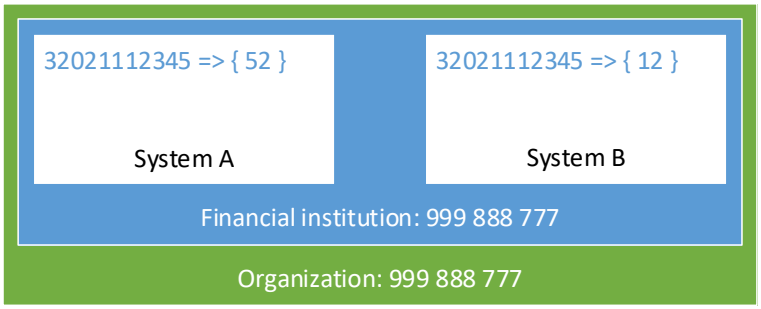
3. A financial institution is responsible for aggregating data from all internal systems before that is sent to the Debt Information Company (**Example 1**).
4. The customer array in the reported data may come from multiple financial institutions. A unique instance of the customer for each financial institution shall exist. The loans array of a customer object shall not contain data from multiple financial institutions. (**Example 2**).
5. The financial institution ID and the organization shall be the same if there exist a certificate for the provider D. Otherwise the provider ID shall be related to the certificate (**Example 3**).
6. The customer array in the reported data may come from multiple financial institutions and multiple systems. A unique instance of the customer for each financial institution shall exist, containing data for all systems used by the financial institution. The loans array of a customer object shall not contain data from multiple financial institutions **(Example 4)**.
7. More than one service provider may report on behalf of the same financial institution as long as each service provider adheres to the requirements of the specification.

8.1 Example 1

This example illustrates how a financial institution 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 financial institution, and the green box reports the organization reporting the data on behalf of the financial institution.



Message

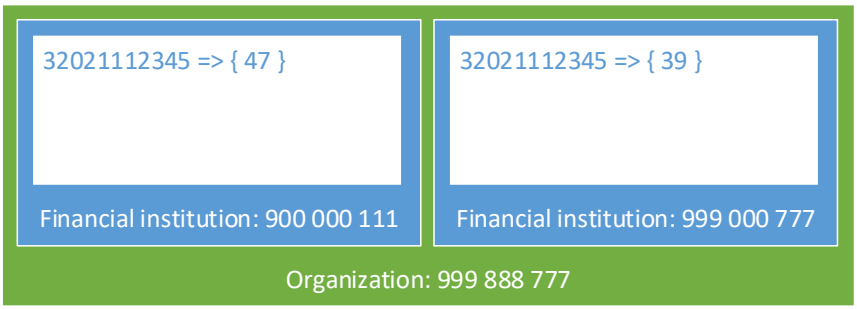

```
{
	"providerID" : "9908:999888777",
	"customers" : [{
		"customerID" : "32021112345",
		"financialInstitutionID" : "999888777",
		"loans" : [{
			"type" : " creditFacility",
			"timestamp" : "2018-02-05T12:54:12Z",
			"accountID" : "12",
			"accountName" : "Kort",
			"creditLimit" : "10000000",
			"interestBearingBalance" : "5000000",
			"nonInterestBearingBalance" : "0",
			"nominalInterestRate" : "000800",
			"installmentCharges" : "5000",
			"installmentChargePeriod" : "MONTHLY",
			"coBorrower" : "0"
		}, {
			"type" : "chargeCard",
			"timestamp" : "2018-02-05T12:54:11Z",
			"accountID" : "52",
			"accountName" : "Kort",
			"interestBearingBalance" : "0",
			"nonInterestBearingBalance" : "12500",
			"coBorrower" : "0"
		}]
	}]
}
```

8.2 Example 2

This example illustrates how data shall be reported from multiple financial institutions.

Overview

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



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"
		}]
	}]
}
```

8.3 Example 3

This example shows the relation between the financial institutions ID and the provider ID in the message, if another organization is reporting data on behalf of an organization.

Certificate

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

Message

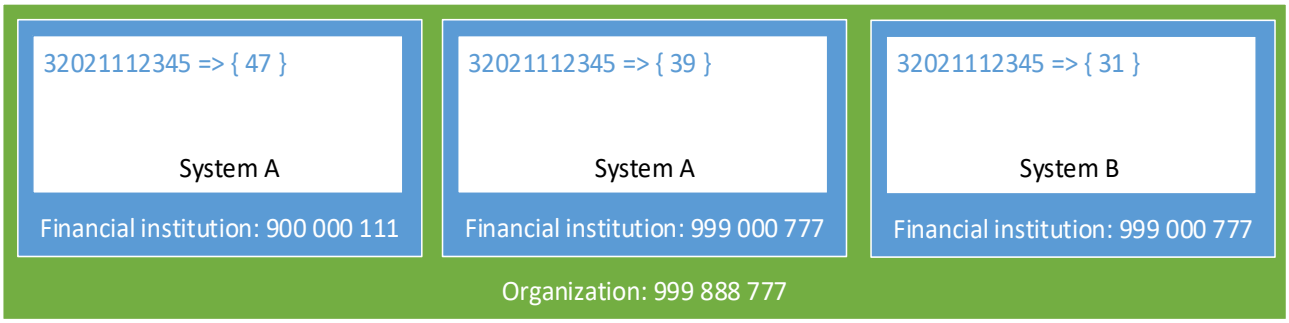
```
{
        "providerID" : "9908:999888777",
        "customers" : [{
                "customerID" : "32021112345",
                "financialInstitutionID" : "123456789"
        ...
}
```

8.4 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 financial institution, and the green box reports the organization reporting the data on behalf of the financial institution.



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"
		}]
	}]
}
```

9 Appendix D: Onboarding

There will be an onboarding process between the FIs and DICs where both FIs and DICs must communicate for progression. In these matters, there will be established an own wiki page with relevant documentation and possibility for effective communication. There will also be a repository with code examples for the different technical parts of the solution, which allows for reuse.

When the solution is ready for production, all traffic between FIs and DICs must be sent over HTTPS via RESTful APIs according to this specification. However, in special cases, as part of the onboarding process, an FI and a DIC may agree that production data can be supplied over SFTP. This exception only applies for the operation to get debt information for all customers (getAllData), and only for a short period of time when RESTful API deliveries are not complete.

10 Appendix E: Additional FI providerID and Foreign organisational number

Separate prefix and id with a colon. This list is manually updated and are to be communicated between the DICs when there is an addition. Identifier of the financial institution or their service provider shall be matched against the organization number in the certificate.

Norwegian FIs:
If there is a need for additional provider IDs, i.e. when 9908: has previously been used together with a Norwegian organization number, use the prefix 9990:organization id. Example: Nordea Finans Norge AS requires a second integration with the DICs.

Foreign Fis,
Use country code prefix according to ISO 6523, FIs. Example: Qliro AB (Sweden): “0007:5569622441”.

Financial institution	Country	financialInstitutionId
NORDEA FINANS NORGE AS	Norway	9990:924507500
Qliro AB	Sweden	0007:5569622441

For Qliro AB (Sweden) the call and response will then be:

Get SSN information about all customers (/ssn/{financialinstitutionid})	Response

/ssn/5569622441	{
	"providerID" : "0007:5569622441",
	"financialInstitutionID" : "5569622441",
	"timestamp" : "2020-02-05T12:54:12Z",
	"customers": [
	"12345678901",
	"23456789012",
	"34567890123"]
	}