Durable Data API

Financial Services Durable Data API Working Group

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1. Introduction

A Durable Data API broker shares financial transaction and tax data between financial data providers (usually a financial institution) (FI) and financial data consumers (typically personal finance management applications) (PFM).

2. Ability Criteria

2.1. Performance

- Low latency for real-time requests
- High throughput for large data sets and high concurrency

2.2. Scalability

- High throughput for batch transfers and large number of concurrent users
- Large transaction data sets

2.3. Interoperability

- Self identifying data messages (transport neutral)
- Multi-version support

2.4. Extensibility

- Agile addition of properties

2.5. Security

- Consent obtained from data owners before transfer
- Different data types have different scope of consent

2.6. Reliability

- 24/7/.9999 availability
- Bandwidth limiting each data partner to prevent DOS

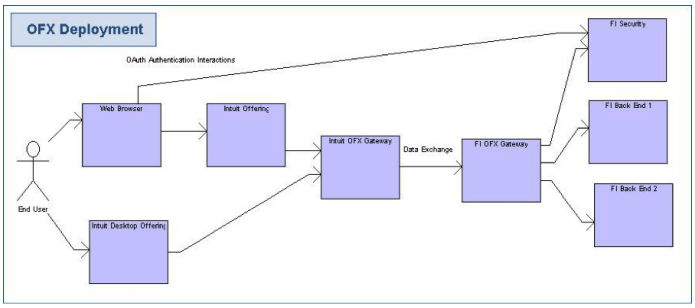
3. Design Principles

The above stated ability criteria lead to specific design principles and implementation patterns. Scalability concerns indicate the use of stateless patterns.

4. Deployment

In legacy OFX, a multitude of desktop PFM applications connect to a multitude of OFX servers. In Durable Data API, this is replaced with a service bus model.

Financial data consumers (such as Intuit) will consolidate requests from all application clients into a single Durable Data API client. The FI's Durable Data API server will authenticate and direct the incoming requests to the appropriate FI backend server.



5. Message Transport

Durable Data API requires the use of HTTP, which a reliable synchronous stateless message protocol. REST is preferred because it decouples the message syntax from the transport concerns. REST supports content type negotiation, conditional fetches, and compression. Since confidential information is being exchanged, all interactions must be encrypted with TLS/TLS (HTTPS).

6. Service Delivery Expectations

The Durable Data API server response to requests must start within 30 seconds. The server may use HTTP 100 continue or 200 chunked encoding response to extend the response time for large data sets. Server responses should not last longer than 120 seconds to prevent long running transactions.

7. Message Syntax

Durable Data API supports two syntax options: JSON is the preferred syntax, and XML the alternative syntax.

8. Security

8.1. Model

Durable Data API uses OAuth 2.0 for authorization. The details of how an Durable Data API client obtains an OAuth token are covered in the OAuth 2.0 RFC. The Durable Data API client must have the following information to successfully interact with a Durable Data API server:

1. OAuth authorization server
    a. Authorization endpoint, e.g. https://oauth.example.com/authorization
    b. Client identifier, e.g. intuit.com
    c. Requested scope ("accounts", "customer", "images", "transfer", "transactions")
    d. Allowed redirection client URI, e.g. https://oauth.intuit.com/client
    e. Token endpoint, e.g. https://oauth.example.com/authorization
    f. Client authorization (JWT or shared secret)
    g. Optional client authentication certificate
    h. Authorization Server Certifying Authority public key chain
2. Durable Data API Service (OAuth resource server)
    a. Endpoint, e.g. https://data.example.com
    b. client authorization (Bearer or MAC token)

(Optional) client authentication certificate. Use mutual authentication for access by the client agents in addition to the refresh or access token.

d. Resource Server Certifying Authority public key chain. Client will need to make sure server SSL certificate CA is in their truststore.

The FI's Authorization Server must support Authorization Code Grant OAuth as defined in section 4.1 of RFC6749.

8.2. Client Authentication

The **recommended** approach to securely communicate between an Aggregator and FI is through use of both network transport mutual authentication and message security as defined by the use of the OAuth 2.0 Authorization Code Grant and Bearer Token model. Alternative supported methods are outlined below.

Network transport mutual authentication will consist of a two way TLS/SSL network connection used for all web service calls made between the Aggregator and FI for both OAuth token acquisition and data aggregation operations. The X.509 certificates must be issued and validated by an authorized certificate authority. This will provide data origin authentication, data integrity, and data confidentiality between the Aggregator and FI.

The Aggregator system must be capable of maintaining the confidentiality of their credentials for each FI (e.g. client implemented on a secure server with restricted access to the client credentials).

X = **Recommended** x = Alternatives supported

Network Transport TLS/SSL		Client Authentication		Token Type	
Server Side Authentication	**Mutual Authentication**	**Shared Secret**	**JWT**	**Bearer**	**MAC**
	X	X		X	
x		x		x	
x			x		x

Server Side Authentication – Only the Server authenticates itself, assuring its identity to the client across the network transport. Mutual Authentication – Enables both Client and Server to authenticate to each other, assuring each other's identity across the network transport.

In line with FFIEC (Federal Financial Institutions Examination Council) guidance on Authentication to mitigate security risks

When invoking the FI's Durable Data API data service, the Durable Data API client will provide an Authorization header with the access tokens encoded per the agreed encoding.

8.3. Token Scope

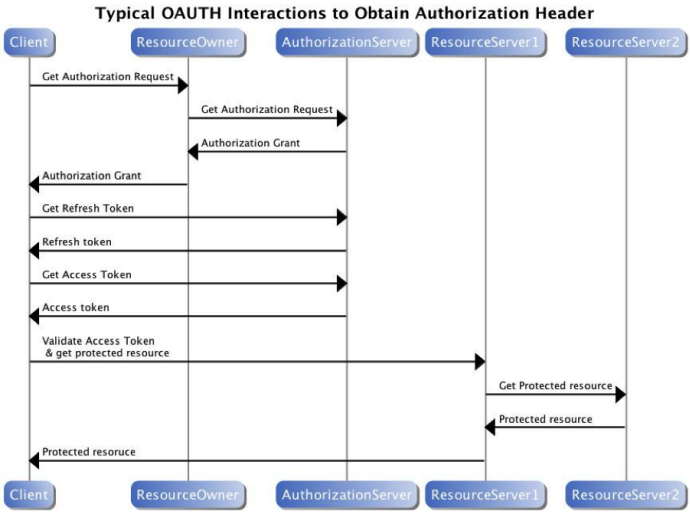
The Durable Data API client application will include a list of desired scopes when requesting an authorization token. The following scopes are defined for Durable Data API data service.

Primary Entity	Allowed Actions	Token Scope
Account	Read only Access to summary account information	FinancialInformation
Customer	Read only Access to customer information, including PII	FinancialInformation
Image	Read only Access to transaction images (checks and receipts)	FinancialInformation
Statement	Read only Access to statement image	FinancialInformation
Transfer	Transfer of money between accounts	Transfer
Transaction	Read only Access to transaction information	FinancialInformation

The Durable Data API server will return the list of allowed scopes with the issued authorization token.

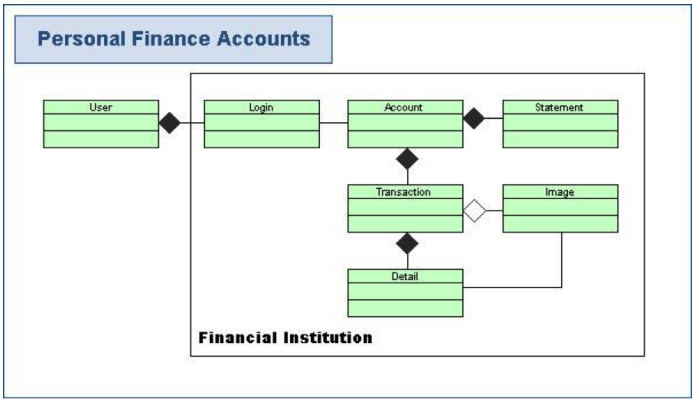
The Durable Data API server may limit the scopes for the purpose of not implementing certain APIs.

The Durable Data API server may also present scopes in the access confirmation page after end user login to have them determine each account(s) access for the requesting application.



9. Logical Data Model

Durable Data API will eventually encompass multiple financial data domains. At this point, entities and messages are required to support the aggregation of personal financial data. The logical data model consists of User, Login, Account, Transaction, Detail, Statement and Image entities.



9.1. Entity Identity

The User entity is not expressed in Durable Data API messages. The Login entity has an identity unique to its owning Institution. The Login identity is usually the username part of a username / password login. The Login surrogate identity is the OAuth token obtained from the Financial Institution. The Account entity has an identity that is unique to the owning Institution. The Transaction entity has an identity that is unique to the owning Account and is usually unique to the owning Institution.

The entity identity (or surrogate identity) is required when transmitting the entities and is used to relate the entities. Durable Data API identity properties have a maximum of 32 characters. (IBAN account identifiers are 31 characters, ACH has 9 digits for routing and 17 digits for account number, OFX 2.0 allowed `<FITID> with up to 255 characters but recommended 32 or fewer).

9.2. Surrogate Identity

OAuth creates a surrogate identity for a Login – a Durable Data API server does not expose the financial institution's principal identity of the Login. To limit the exposure of personally identifiable information, the other identities transmitted by the Durable Data API

server should be a surrogate identity. Surrogates must provide the same uniqueness constraints on the entity relationships as described above. Any surrogate identities must be long term persistent.

If the FI's account identity is considered confidential, a surrogate identity should be used (AccountId should not equal AccountNumber).

10. Residual Data

Residual data is defined as data that is no longer being used, for example if an account has been closed. Aggregators should delete residual data from their systems within 180 days.

11. Protocol

The Durable Data API client requests data using HTTP GET and POST methods. The request includes an appropriate Request-URI. Requests must include an OAuth token in the authorization header. The following is a sample of the headers provided in a typical request.

```
GET /accounts HTTP/1.1
Host: example.com
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Accept: application/json
Accept-Charset: UTF-8
Accept-Encoding: gzip
```

The Durable Data API server will use HTTP status codes to indicate the success or failure of a request. Response code details specific to Durable Data API follow. For status codes other than 200, the HTTP response body must contain an Error Entity.

11.1. Headers

11.1.1. Transport Security

All Durable Data API communication must be secured from network sniffing with SSL/TLS. Using TLS will secure the entire request and response including any headers. We recommend that both the Durable Data API client and server use certificates. Additionally, Durable Data API server responses should include Cache-Control headers to prevent any caching or storing of the response.

```
Cache-Control: no-cache, no-store
```

11.1.2. Request Authorization

The Durable Data API client does not identify a User to the Durable Data API server. Instead, the User's financial institution Login is implied via an OAuth token. The data returned by any Durable Data API request is limited to what the User could see using his/her Login and further limited by the scope of the OAuth token.

The Durable Data API client uses the Authorization request header with a Bearer or MAC token. Bearer tokens are recommended although the server has option to issue MAC tokens as an alternative if the client supports it. How to obtain this token was detailed in the Security Model section.

```
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
```

11.1.3. Content Negotiation

Durable Data API clients and servers use standard HTTP headers to negotiate transport options.

The Durable Data API client uses the Accept request header to ask for its preferred syntax. The server must respond with one of the requested syntaxes or with a 406 status code.

```
Accept: application/json,application/xml;q=0.5
```

The Durable Data API client uses the Accept-Charset request header to ask for its preferred character set. The server must respond with the body encoded in one of the requested character sets or with a 406 status code.

```
Accept-Charset: UTF-8
```

The Durable Data API server uses the Content-Type response header to inform the client of the response syntax and charset.

```
Content-Type: application/json; charset=UTF-8
```

The Durable Data API client uses the Accept-Encoding request header to ask for its preferred compression encoding. The server must either respond with the body compressed with one of the requested compressions, or with the body not compressed.

```
Accept-Encoding: compress, gzip
```

The Durable Data API server uses the Content-Encoding response header to inform the client of the response encoding.

```
Content-Encoding: gzip
```

For queries, the Durable Data API client may use the If-Modified-Since request header to ask for a data response only if the data has been modified since the given date. If the server supports this header and the data has not been modified, a 304 HTTP response code will be returned to the client.

```
If-Modified-Since: Wed, 12 Sep 2012 06:00:00 GMT
```

11.1.4. Server Environment

The Durable Data API server returns a Date header with every response.

```
Date: Tue, 11 Sep 2012 19:43:31 GMT
```

11.1.5. Host

The Host request header field specifies the Internet host and port number of the resource being requested. A Host header without any trailing port information implies the default port for the service requested (e.g. "80" for an HTTP URL).

```
Host: example.com
```

11.1.6. Client Identity

The Durable Data API client supplies a User-Agent header with every request. This header should not be used to change the content of the response. This header is designed to only collect statistics on the products using the Durable Data API data service. The first token is the aggregator and aggregator version. The second token is the product and product version.

```
User-Agent: Intuit/1.2.3 Mint/4.3.1
```

11.1.7. Customer Identifier

The Durable Data API client can optionally supply a customer identifier with request header `DDA-CustomerId`. This value identifies the user for whom the OAuth 2.0 token was issued. The value of `DDA-CustomerId` must be the same as the the `user_id` parameter returned by the OAuth 2.0 response and the value of the `CustomerId` field in the Customer Entity (if the Durable Data API server implements the

customer operations).

```
DDA-CustomerId: a237cb74-61c9-4319-9fc5-ff5812778d6b
```

11.1.8. Customer Last Login Time

The Durable Data API client can optionally supply the last time the customer logged into the aggregator product if this data is available.

```
DDA-CustomerLastLoggedTime: Tue, 11 Sep 2012 19:43:31 GMT
```

11.1.9. Customer IP Address

The Durable Data API client optionally can supply the customer's IP address if this data is available or applicable.

```
DDA-CustomerIPAdress: 0.0.0.0
```

11.1.10. Interaction Tracking

The Durable Data API client may send the `DDA-InteractionId` request header to the server to help correlate log entries between client and server. Example:

```
DDA-InteractionId: c770aef3-6784-41f7-8e0e-ff5f97bddb3a
```

The Durable Data API server must include the value of this header in its log entries. The Durable Data API server must also send `DDA-InteractionId` as a response header with value equal to the value sent by the client, or a unique value generated by the server if the client did not send `DDA-InteractionId`.

11.1.11. Financial Institution Identification

If the Durable Data API service is provided by a service bureau which uses the same end point for multiple institutions, the Durable Data API client must provide a header the identifies the desired financial institution. The service bureau defines this value. For example, it is often the financial institution's routing number (RTN).

```
DDA-FinancialId: 123456789
```

11.2. Errors

When Durable Data API servers are unable to fulfill a request, they should send Error Entity as the response payload along with an appropriate HTTP Status Code. Error messages should contain just enough information for an end user to understand what went wrong without compromising security.

Error Code	Error Message	HTTP Status Code
601	Customer not found	404
602	Customer not authorized	401
701	Account not found	404
702	Invalid start or end date	400
703	Invalid date range	400
901	Source account not found	404
902	Source account closed	404

Error Code	Error Message	HTTP Status Code
903	Source account not authorized for transfer	401
904	Destination account not found	404
905	Destination account closed	404
906	Destination account not authorized for transfer	401
907	Invalid amount	404
908	Duplicate transfer request	409
909	Transfer not available due to end of day processing	503
910	Insufficient funds	400
911	Transaction limit exceeded	400
950	Transfer not found	404

12. Resources

When implementing Durable Data API, client and server maintainers must agree on the data service endpoint. All resource URIs may be prefixed by a base URI, for example `https://example.com/dda/1.0`. The base URI **should** include the version of Durable Data API that the server implements.

For security reasons identifiers should not be part of the URI and should be part of the HTTP body to prevent in inadvertent information disclosure in server audit logs. For this reason some requests are implemented as `POST` rather than `GET` with parameters sent in the body as form data in `application/x-www-form-urlencoded` format.

12.1. `POST /account`

Get an account.

Request Formats

application/x-www-form-urlencoded

Response Formats

application/json, application/xml

Response

one of DepositAccount, LoanAccount, LocAccount, or InvestmentAccount

Parameter	Type	Description
accountId *required*	form data	Account identifier

Example request for JSON

```
POST /account HTTP/1.1
Host: example.com
Accept: application/json
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/x-www-form-urlencoded

accountId=1
```

Example JSON response

```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8

{
  "DepositAccount" : { }
}
```

Example request for XML

```
POST /account HTTP/1.1
Host: example.com
Accept: application/xml
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/x-www-form-urlencoded

accountId=1
```

Example XML response

```
HTTP/1.1 200 OK
Content-Type: application/xml; charset=utf-8

<DepositAccount xmlns:dda="http://financial-services-durable-data-api.org/2015"/>
```

12.2. POST /account/statement

Get an account statement.

Request Formats

application/x-www-form-urlencoded

Response Formats

application/pdf, image/gif, image/jpeg, image/png, image/tiff

Response

An image of an account statement

Parameter	Type	Description
accountId *required*	form data	Account identifier
statementId *required*	form data	Statement identifier

Example request for `application/pdf`

```
POST /account/statement HTTP/1.1
Host: example.com
Accept: application/pdf
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/x-www-form-urlencoded

accountId=1&statementId=1
```

Example `application/pdf` *response*

```
HTTP/1.1 200 OK
Content-Type: application/pdf

Binary data
```

12.3. POST /account/statements

Get statements.

Request Formats

application/x-www-form-urlencoded

Response Formats

application/json, application/xml

Response Type

Statements

Parameter	Type	Description
accountId *required*	form data	Account identifier
startTime *optional*	form data	Start time for use in retrieval; ISO 8601 date including zone indicator or combined date time including zone indicator
endTime *optional*	form data	End time for use in retrieval; ISO 8601 date including zone indicator or combined date time including zone indicator
page *optional*	form data	Page number (applicable only if the server has indicated that the collection is paginated)

Example request for JSON

```
POST /account/statements HTTP/1.1
Host: example.com
Accept: application/json
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/x-www-form-urlencoded

accountId=1&startTime=2015-01-01Z&endTime=2015-02-01Z&page=1
```

Example JSON response

```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8

{
  "Statements" : { }
}
```

Example request for XML

```
POST /account/statements HTTP/1.1
Host: example.com
Accept: application/xml
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/x-www-form-urlencoded

accountId=1&startTime=2015-01-01Z&endTime=2015-02-01Z&page=1
```

Example XML response

```
HTTP/1.1 200 OK
Content-Type: application/xml; charset=utf-8

<Statements xmlns:dda="http://financial-services-durable-data-api.org/2015"/>
```

12.4. POST /account/transaction/image

Get a transaction image.

Request Formats

application/x-www-form-urlencoded

Response Formats

application/pdf, image/gif, image/jpeg, image/png, image/tiff

Response

An image of a transaction (such as a scanned check)

Parameter	Type	Description
accountId *required*	form data	Account identifier
imageId *required*	form data	Image identifier
startTime *optional*	form data	Start time for use in retrieval; ISO 8601 date including zone indicator or combined date time including zone indicator
endTime *optional*	form data	End time for use in retrieval; ISO 8601 date including zone indicator or combined date time including zone indicator

Example request for `application/pdf`

```
POST /account/transaction/image HTTP/1.1
Host: example.com
Accept: application/pdf
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/x-www-form-urlencoded

accountId=1&imageId=1&startTime=2015-01-01Z&endTime=2015-02-01Z
```

Example `application/pdf` *response*

```
HTTP/1.1 200 OK
Content-Type: application/pdf

Binary data
```

12.5. POST /account/transactions

Get account transactions.

Request Formats

application/x-www-form-urlencoded

Response Formats

application/json, application/xml

Response Type

Transactions

Parameter	Type	Description
accountId *required*	form data	Account identifier
startTime *optional*	form data	Start time for use in retrieval; ISO 8601 date including zone indicator or combined date time including zone indicator
endTime *optional*	form data	End time for use in retrieval; ISO 8601 date including zone indicator or combined date time including zone indicator
page *optional*	form data	Page number (applicable only if the server has indicated that the collection is paginated)

Example request for JSON

```
POST /account/transactions HTTP/1.1
Host: example.com
Accept: application/json
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/x-www-form-urlencoded

accountId=1&startTime=2015-01-01Z&endTime=2015-02-01Z&page=1
```

Example JSON response

```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8

{
  "Transactions" : { }
}
```

Example request for XML

```
POST /account/transactions HTTP/1.1
Host: example.com
Accept: application/xml
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/x-www-form-urlencoded

accountId=1&startTime=2015-01-01Z&endTime=2015-02-01Z&page=1
```

Example XML response

```
HTTP/1.1 200 OK
Content-Type: application/xml; charset=utf-8

<Transactions xmlns:dda="http://financial-services-durable-data-api.org/2015"/>
```

12.6. GET /accountlist

Get a lightweight list of accounts for the current token.

Response Formats

application/json, application/xml

Response Type

AccountDescriptorList

Example request for JSON

```
GET /accountlist HTTP/1.1
Host: example.com
Accept: application/json
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
```

Example JSON response

```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8

{
  "AccountDescriptorList" : { }
}
```

Example request for XML

```
GET /accountlist HTTP/1.1
Host: example.com
Accept: application/xml
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
```

Example XML response

```
HTTP/1.1 200 OK
Content-Type: application/xml; charset=utf-8

<AccountDescriptorList xmlns:dda="http://financial-services-durable-data-api.org/2015"/>
```

12.7. GET /accountsdetails

Get all account information (details & transactions) for the current token.

Response Formats

application/json, application/xml

Response Type

Accounts

Parameter	Type	Description
startTime *optional*	form data	Start time for use in retrieval; ISO 8601 date including zone indicator or combined date time including zone indicator
endTime *optional*	form data	End time for use in retrieval; ISO 8601 date including zone indicator or combined date time including zone indicator
page *optional*	form data	Page number (applicable only if the server has indicated that the collection is paginated)

Example request for JSON

```
GET /accountsdetails HTTP/1.1
Host: example.com
Accept: application/json
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
```

Example JSON response

```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8

{
  "Accounts" : { }
}
```

Example request for XML

```
GET /accountsdetails HTTP/1.1
Host: example.com
Accept: application/xml
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
```

Example XML response

```
HTTP/1.1 200 OK
Content-Type: application/xml; charset=utf-8

<Accounts xmlns:dda="http://financial-services-durable-data-api.org/2015"/>
```

12.8. POST /accountsdetails

Query all information for a set of accounts provided in the payload.

Request Formats

application/json, application/xml

Response Formats

application/json, application/xml

Response Type

Accounts

Parameter	Type	Description
body *required*	AccountsDetailsRequest	Request for a detailed list of accounts

Example request for JSON

```
POST /accountsdetails HTTP/1.1
Host: example.com
Accept: application/json
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/json

{
  "AccountsDetailsRequest" : {
    "singleAccountDetailsRequestList" : {
      "singleAccountDetailsRequest" : [ {
        "accountId" : "1",
        "startTime" : "2015-04-01T00:00:00.000Z"
      }, {
        "accountId" : "2",
        "startTime" : "2015-05-01T00:00:00.000Z"
      } ]
    }
  }
}
```

Example JSON response

```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8

{
  "Accounts" : { }
}
```

Example request for XML

```
POST /accountsdetails HTTP/1.1
Host: example.com
Accept: application/xml
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/xml

<AccountsDetailsRequest xmlns:dda="http://financial-services-durable-data-api.org/2015">
  <SingleAccountDetailsRequestList>
    <SingleAccountDetailsRequest>
      <AccountId>1</AccountId>
      <StartTime>2015-04-01T00:00:00.000Z</StartTime>
    </SingleAccountDetailsRequest>
    <SingleAccountDetailsRequest>
      <AccountId>2</AccountId>
      <StartTime>2015-05-01T00:00:00.000Z</StartTime>
    </SingleAccountDetailsRequest>
  </SingleAccountDetailsRequestList>
</AccountsDetailsRequest>
```

Example XML response

```
HTTP/1.1 200 OK
Content-Type: application/xml; charset=utf-8

<Accounts xmlns:dda="http://financial-services-durable-data-api.org/2015"/>
```

12.9. GET /availability

Get information about this API's availability.

Response Formats

application/json, application/xml

Response Type

Availability

Example request for JSON

```
GET /availability HTTP/1.1
Host: example.com
Accept: application/json
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
```

Example JSON response

```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8

{
  "Availability" : { }
}
```

Example request for XML

```
GET /availability HTTP/1.1
Host: example.com
Accept: application/xml
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
```

Example XML response

```
HTTP/1.1 200 OK
Content-Type: application/xml; charset=utf-8

<Availability xmlns:dda="http://financial-services-durable-data-api.org/2015"/>
```

12.10. GET /capability

Get information about this API's capabilities.

Response Formats

application/json, application/xml

Response Type

Capability

Example request for JSON

```
GET /capability HTTP/1.1
Host: example.com
Accept: application/json
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
```

Example JSON response

```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8

{
  "Capability" : {
    "allowedConnections" : 10,
    "supportsCustomer" : true,
    "supportsAccounts" : true,
    "supportsTransactions" : true,
    "supportsImage" : true,
    "messageFormat" : "JSON"
  }
}
```

Example request for XML

```
GET /capability HTTP/1.1
Host: example.com
Accept: application/xml
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
```

Example XML response

```
HTTP/1.1 200 OK
Content-Type: application/xml; charset=utf-8

<Capability xmlns:dda="http://financial-services-durable-data-api.org/2015">
  <AllowedConnections>10</AllowedConnections>
  <SupportsCustomer>true</SupportsCustomer>
  <SupportsAccounts>true</SupportsAccounts>
  <SupportsTransactions>true</SupportsTransactions>
  <SupportsImage>true</SupportsImage>
  <MessageFormat>XML</MessageFormat>
</Capability>
```

12.11. GET /customer

Get information about the customer within the authorization scope.

Response Formats

application/json, application/xml

Response Type

Customer

Example request for JSON

```
GET /customer HTTP/1.1
Host: example.com
Accept: application/json
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
```

Example JSON response

```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8

{
  "Customer" : {
    "name" : {
      "first" : "Michael",
      "middle" : "J",
      "last" : "Smith",
      "company" : "Acme"
    },
    "taxId" : "144-27-7471"
  }
}
```

Example request for XML

```
GET /customer HTTP/1.1
Host: example.com
Accept: application/xml
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
```

Example XML response

```
HTTP/1.1 200 OK
Content-Type: application/xml; charset=utf-8

<Customer xmlns:dda="http://financial-services-durable-data-api.org/2015">
  <Name>
    <First>Michael</First>
    <Middle>J</Middle>
    <Last>Smith</Last>
    <Company>Acme</Company>
  </Name>
  <TaxId>144-27-7471</TaxId>
</Customer>
```

12.12. POST /transfer

Create a transfer between accounts.

Request Formats

application/json, application/xml

Response Formats

application/json, application/xml

Response Type

TransferStatus

Parameter	Type	Description
body *required*	Transfer	Transfer entity

Example request for JSON

```
POST /transfer HTTP/1.1
Host: example.com
Accept: application/json
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/json

{
  "Transfer" : { }
}
```

Example JSON response

```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8

{
  "TransferStatus" : { }
}
```

Example request for XML

```
POST /transfer HTTP/1.1
Host: example.com
Accept: application/xml
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/xml

<Transfer xmlns:dda="http://financial-services-durable-data-api.org/2015"/>
```

Example XML response

```
HTTP/1.1 200 OK
Content-Type: application/xml; charset=utf-8

<TransferStatus xmlns:dda="http://financial-services-durable-data-api.org/2015"/>
```

12.13. POST /transfer/status

Get status of a transfer between accounts.

Request Formats

application/x-www-form-urlencoded

Response Formats

application/json, application/xml

Response Type

TransferStatus

Parameter	Type	Description
transferId *required*	form data	Transfer identifier

Example request for JSON

```
POST /transfer/status HTTP/1.1
Host: example.com
Accept: application/json
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/x-www-form-urlencoded

transferId=1
```

Example JSON response

```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8

{
  "TransferStatus" : { }
}
```

Example request for XML

```
POST /transfer/status HTTP/1.1
Host: example.com
Accept: application/xml
Authorization: Bearer w0mcJylzCn-AfvuGdqkty2-KP48=
Content-Type: application/x-www-form-urlencoded

transferId=1
```

Example XML response

```
HTTP/1.1 200 OK
Content-Type: application/xml; charset=utf-8

<TransferStatus xmlns:dda="http://financial-services-durable-data-api.org/2015"/>
```

13. Entities

Entities are specified in the accompanying XML schema document `durable-data-api.xsd`. Fields are optional unless marked as required.

13.1. Account Entity

An abstract account entity that concrete account entities extend.

Extends and inherits all fields from AccountDescriptor.

Field	Type	Description
ParentAccountId	Identifier	Long-term persistent identity of the parent account. This is used to group accounts.
Nickname	string	The user's moniker for the account
Currency	Currency *required*	Currency Aggregate
LineOfBusiness	string	The line of business, such as consumer, consumer joint, small business, corporate, etc.
AccountNumber	string *required*	End user's handle for account at owning institution

Field	Type	Description
RoutingTransitNumber	string	RTN associated with account number at owning institution.
BalanceType	BalanceType	ASSET (positive transaction amount increases balance), LIABILITY (positive transaction amount decreases balance)
InterestRate	Number *required*	Interest Rate of Account
InterestRateType	InterestRateType	FIXED or VARIABLE
InterestRateAsOf	Timestamp	Date of account's interest rate
PriorInterestRate	Number	Previous Interest Rate of Account
TransferIn	Boolean	Account is eligible for incoming transfers
TransferOut	Boolean	Account is eligible for outgoing transfers
MicrNumber	String64	MICR Number
LastActivityDate	Timestamp	Date that last transaction occurred on account
TransactionsIncluded	Boolean	Default is false. If present and true, a call to retrieve transactions will not return any further details about this account. This is an optimization that allows a Durable Data API server to return transactions and account details in a single call.

13.2. AccountDescriptor Entity

Minimal information about the account for use in lightweight arrays.

Field	Type	Description
AccountId	Identifier *required*	Long-term persistent identity of the account. Not an account number. This identity must be unique to the owning institution.
Error	Error	Present if an error was encountered while retrieving this account
AccountType	AccountType	Account type
DisplayName	string *required*	Account identity to display to customer. This may be a masked account number or product name followed by masked number.
Status	AccountStatus *required*	OPEN, CLOSED, PENDINGOPEN, PENDINGCLOSE, DELINQUENT, PAID, NEGATIVECURRENTBALANCE.
Description	string	Description of account
FiAttributes	Array of FiAttribute	Array of FI-specific attributes

13.3. AccountDescriptorList Entity

A lightweight array of accounts.

Field	Type	Description
AccountDescriptor	Array of AccountDescriptor	

13.4. Accounts Entity

An optionally paginated array of accounts.

Field	Type	Description
Total	int	Total number of results in this collection across all pages
TotalPages	int	Total number of pages
Page	int	Current page number
zero or more of **DepositAccount**, **InvestmentAccount**, **LoanAccount**, or **LocAccount**	DepositAccount, InvestmentAccount, LoanAccount, or LocAccount	An array of accounts with entity types dependent on the account type (deposit, investment, loan, or line of credit)

13.5. AccountsDetailsRequest Entity

Field	Type	Description
SingleAccountDetailsRequestList	SingleAccountDetailsRequestList *required*	

13.6. Availability Entity

Field	Type	Description
CurrentStatus	string *required*	
CurrentStatusDesc	string *required*	
PlannedAvailability	Array of PlannedAvailability	

13.7. Capability Entity

Describes capabilities of this implementation of Durable Data API.

Field	Type	Description
AllowedConnections	int	Number of concurrent connections allowed for this client
ActiveConnections	int	Current number of active connections for this client
SupportsCustomer	Boolean	Capable of responding to customer queries. Defaults to false.
SupportsAccounts	Boolean	Capable of responding to accounts and account queries. Defaults to false.
SupportsTransactions	Boolean	Capable of responding to transaction queries. Defaults to false.
SupportsStatements	Boolean	Capable of responding to statements and statement queries. Defaults to false.
SupportsImage	Boolean	Capable of responding to image queries. Defaults to false.
SupportsBillPay	Boolean	Capable of supporting a bill payment request. Defaults to false.
SupportsTransfer	Boolean	Capable of supporting a transfer request. Defaults to false.
MessageFormat	MessageFormat	Whether messages are in XML or JSON format. Defaults to JSON.
TransferCutOffTime	Timestamp	Cut off time for transfers. Required if transfers are supported.

Field	Type	Description
BillPayCutOffTime	Timestamp	Cut off time for bill payment. Required if bill payment is supported.

13.8. Contribution Entity

Field	Type	Description
SecurityId	string	Unique identifier of security
SecurityIdType	SecurityIdType	Security identifier type
EmployerMatchPercentage	Number	Employer contribution match percentage
EmployerMatchAmount	Number	Employer contribution match amount
EmployeePreTaxAmount	Number	Employee pre-tax contribution amount
EmployeePreTaxPercentage	Number	Employee pre-tax contribution percentage
EmployeeAfterTaxAmount	Number	Employee after tax contribution amount
EmployeeAfterTaxPercentage	Number	Employee after tax contribution percentage
EmployeeDeferPreTaxAmount	Number	Employee defer pre-tax contribution match amount
EmployeeDeferPreTaxPercentage	Number	Employee defer pre-tax contribution match percentage
EmployeeYearToDate	Number	Employee total year to date contribution
EmployerYearToDate	Number	Employer total year to date contribution
RolloverContributionPercentage	Number	Rollover contribution percentage
RolloverContributionAmount	Number	Rollover contribution Amount

13.9. Currency Entity

Field	Type	Description
CurrencyRate	Number	Currency rate between original and converted currency
CurrencyCode	Iso4217Code	ISO 4217 currency code
OriginalCurrencyCode	Iso4217Code	Original ISO 4217 currency code

13.10. Customer Entity

Field	Type	Description
CustomerId	Identifier *required*	Long-term persistent identity of the customer. This identity must be unique to the owning institution.
Name	CustomerName *required*	The customer's name
DateOfBirth	Timestamp	The customer's date of birth
TaxId	string	The SSN or TIN associated with this customer
GovernmentId	string	A federal (such as passport) or state (such as driver's license) issued identifier

Field	Type	Description
Email	Array of string	An array of the customer's electronic mail addresses
Addresses	Array of DeliveryAddress	An array of the customer's physical mail addresses
Telephones	Array of TelephoneNumber	An array of the customer's telephone numbers

13.11. CustomerName Entity

Field	Type	Description
Prefix	string	Name prefix, e.g. Mr.
First	string *required*	First name
Middle	string	Middle name
Last	string *required*	Last name
Suffix	string	Name suffix, e.g. Jr.
Company	string	Company name

13.12. DebtSecurity Entity

Field	Type	Description
ParValue	Number	Par value amount
DebtType	DebtType	Debt type (COUPON, ZERO)
DebtClass	DebtClass	Classification of debt (TREASURY, MUNICIPAL, CORPORATE, OTHER)
CouponRate	Number	Bond coupon rate for next closest call date
CouponDate	Timestamp	Maturity date for next coupon
CouponMatureFrequency	CouponMatureFrequency	When coupons mature. One of the following values: MONTHLY, QUARTERLY, SEMIANNUAL, ANNUAL, or OTHER
CallPrice	Number	Bond call price
YieldToCall	Number	Yield to next call
CallDate	Timestamp	Next call date
CallType	CallType	Type of next call. CALL, PUT, PREFUND, MATURITY
YieldToMaturity	Number	Yield to maturity

13.13. DeliveryAddress Entity

Field	Type	Description
Type	DeliveryAddressType	HOME, BUSINESS, MAILING
Line1	String64 *required*	The delivery location's first line

Field	Type	Description
Line2	String64	The delivery location's second line
Line3	String64	The delivery location's third line
City	String64 *required*	The delivery location's city
State	String2 *required*	The delivery location's state
Zip	String9 *required*	The delivery location's zip code
Country	Iso3166CountryCode	ISO 3166 two digit country code

13.14. DepositAccount Entity

Extends and inherits all fields from Account.

Field	Type	Description
BalanceAsOf	Timestamp *required*	As-of date of balances
CurrentBalance	Number *required*	Balance of funds in account
OpeningDayBalance	Number	Day's opening fund balance
AvailableBalance	Number	Balance of funds available for use
AnnualPercentageYield	Number	Annual Percentage Yield
InterestYtd	Number	YTD Interest
Term	int	Term of CD in months
MaturityDate	Timestamp	Maturity date for CDs
Transactions	Array of DepositTransaction	

13.15. DepositTransaction Entity

Extends and inherits all fields from Transaction.

Field	Type	Description
TransactionType	DepositTransactionType *required*	CHECK, WITHDRAWAL, TRANSFER, POSDEBIT, ATMWITHDRAWAL, BILLPAYMENT, FEE, DEPOSIT, ADJUSTMENT, INTEREST, DIVIDEND, DIRECTDEPOSIT, ATMDEPOSIT, POSCREDIT
Payee	String255	Payee name
CheckNumber	int	Check number

13.16. Error Entity

An error entity which can be used at the API level for error responses or at the account level to indicate a problem specific to a particular account.

Field	Type	Description
Code	string *required*	Long term persistent identifier which can be used to trace error condition back to log information
Message	string	End user displayable information which might help the customer diagnose an error

13.17. FiAttribute Entity

FI-specific attribute.

Field	Type	Description
Name	string *required*	Name of attribute
Value	string *required*	Value of attribute

13.18. FiPortion Entity

Field	Type	Description
AssetClass	string	FI-specific asset class
Percent	Number	Percentage of asset class that falls under this asset

13.19. Holding Entity

Field	Type	Description
HoldingId	Identifier	Long term persistent identity of the holding
SecurityId	string	Unique identifier of security
SecurityIdType	SecurityIdType	Security identifier type
HoldingName	string	Holding name or security name
HoldingType	HoldingType	STOCK, BOND, MUTUALFUND, CD, ANNUITY, OPTIONS
HoldingSubType	HoldingSubType	MONEYMARKET, CASH
PositionType	PositionType	LONG, SHORT
HeldInAccount	HeldInAccount	Sub-account CASH, MARGIN, SHORT, OTHER
Description	string	The description of the holding
Symbol	string	Ticker / Market symbol
OriginalPurchaseDate	Timestamp	Date of original purchase
PurchasedPrice	Number	Price of holding at the time of purchase
CurrentUnitPrice	Number	Current unit price
ChangeInPrice	Number	Change in current price compared to previous day’s close
CurrentUnitPriceDate	Timestamp	Current unit price as of date

Field	Type	Description
Units	Number *required*	Required for stock, mutual funds. Number of shares (with decimals).
MarketValue	Number	Market value at the time of data retrieved
FaceValue	Number	Required for bonds. Face value at the time of data retrieved.
AverageCost	Boolean	Cost is average of all purchases for holding
CashAccount	Boolean	If true, indicates that this holding is used to maintain proceeds from sales, dividends, and other cash postings to the investment account
Rate	Number	For CDs, bonds, and other rate based holdings
ExpirationDate	Timestamp	For CDs, bonds, and other time-based holdings
Inv401kSource	Inv401kSourceType	Source for money for this security. PRETAX, AFTERTAX, MATCH, PROFITSHARING, ROLLOVER, OTHERVEST, OTHERNONVEST
Currency	Currency	Currency information if it is different from Account entity
AssetClasses	Array of Portion	Percent breakdown by asset class
FiAssetClasses	Array of FiPortion	Percent breakdown by FI-specific asset class percentage breakdown
FiAttributes	Array of FiAttribute	Array of FI-specific attributes
TaxLots	Array of TaxLot	Breakdown by tax lot
one of **MutualFundSecurity**, **OptionSecurity**, **OtherSecurity**, **StockSecurity**, **SweepSecurity**, or **DebtSecurity**	MutualFundSecurity, OptionSecurity, OtherSecurity, StockSecurity, SweepSecurity, or DebtSecurity	Information about the security specific to the type of security

13.20. InvestmentAccount Entity

Extends and inherits all fields from Account.

Field	Type	Description
BalanceAsOf	Timestamp *required*	As-of date for balances
AllowedCheckWriting	Boolean	Check writing privileges
AllowedOptionTrade	Boolean	Allowed to trade options
CurrentValue	Number *required*	Total current value of all investments
Holdings	Array of Holding	Array of holdings
OpenOrders	Array of OpenOrder	Array of open orders
Contribution	Array of Contribution	Describes how new contributions are distributed among the available securities
Vesting	Array of Vesting	Provides the past, present, and future vesting schedule and percentages

Field	Type	Description
InvestmentLoans	Array of InvestmentLoan	Array of investment loans
AvailableCashBalance	Number	Cash balance across all sub-accounts. Should include sweep funds.
Margin	Boolean	Margin trading is allowed
MarginBalance	Number	Margin balance
ShortBalance	Number	Short balance
RolloverAmount	Number	Rollover amount
EmployerName	string	Name of the employer in investment 401k Plan
BrokerId	string	Unique identifier FI
PlanId	string	Plan number for Investment 401k plan
CalendarYearFor401k	Timestamp	Date for this calendar year for 401K account
BalanceList	Array of InvestmentBalance	Balance List. Name value pair aggregate.
DailyChange	Number	Daily change
PercentageChange	Number	Percentage change
Transactions	Array of InvestmentTransaction	

13.21. InvestmentBalance Entity

Field	Type	Description
BalanceName	string	Name of the balance
BalanceDescription	string	Description of balance
BalanceType	InvestmentBalanceType	AMOUNT, PERCENTAGE
BalanceValue	Number	Value of balance name
BalanceDate	Timestamp	Date as of this balance
Currency	Currency	Currency if different from that of account

13.22. InvestmentLoan Entity

Field	Type	Description
LoanId	string *required*	Unique identifier for this loan
LoanDescription	string	Description
InitialLoanBalance	Number	Initial loan balance amount
LoanStartDate	Timestamp	Start date of the loan
CurrentLoanBalance	Number *required*	Current loan principal balance amount
DateAsOf	Timestamp *required*	Date and time of current loan balance

Field	Type	Description
LoanRate	Number	Loan annual interest rate for the loan
LoanPaymentAmount	Number	Loan payment amount
LoanPaymentFrequency	LoanPaymentFrequency	WEEKLY, BIWEEKLY, TWICEMONTHLY, MONTHLY,FOURWEEKS, BIMONTHLY, QUARTERLY, SEMIANNUALLY, ANNUALLY, OTHER
LoanPaymentInitial	Number	Initial number of loan payments
LoanPaymentsRemaining	int	Remaining number of loan payments
LoanMaturityDate	Timestamp	Expected loan end date
LoanInterestToDate	Number	Total interest paid to date on this loan
LoanTotalProjectedInterest	Number	Total projected interest to be paid on this loan
LoanNextPaymentDate	Timestamp	The next payment date for the loan

13.23. InvestmentTransaction Entity

Extends and inherits all fields from Transaction.

Field	Type	Description
TransactionType	InvestmentTransactionType *required*	PURCHASED, SOLD, PURCHASEDTOCOVERADJUSTMENT, PURCHASETOOPEN, PURCHASETOCLOSE, SOLDTOOPEN, SOLDTOCLOSE, INTEREST, MARGININTEREST, REINVESTOFINCOME, RETURNOFCAPITAL, TRANSFER, CONTRIBUTION, FEE, OPTIONEXERCISE, OPTIONEXPIRATION, DIVIDEND, DIVIDENDREINVEST, SPLIT, CLOSURE, INCOME, EXPENSE, CLOSUREOPT, INVEXPENSE, JRNLSEC, JRNLFUND, OTHER, DIV, SRVCHG, DEP, ATM, POS, XFER, CHECK, PAYMENT, CASH, DIRECTDEP, DIRECTDEBIT, REPEATPMT
Shares	Number	Required for stock, mutual funds. Number of shares (with decimals). Negative numbers indicate securities are being removed from the account.
FaceValue	Number	Cash value for bonds
Price	Number	Unit purchase price
SecurityId	string	Unique identifier of security
SecurityIdType	SecurityIdType	Security identifier type
SecurityType	SecurityType	STOCK, MUTUALFUND, DEBT, OPTION, SWEEP, OTHER
Symbol	string	Ticker symbol
Markup	Number	Portion of unit price that is attributed to the dealer markup
Commission	Number	Transaction commission
Taxes	Number	Taxes on the trade
Fees	Number	Fees applied to the trade
Load	Number	Load on the transaction
Inv401kSource	Inv401kSourceType	Source of money. PRETAX, AFTERTAX, MATCH,PROFITSHARING, ROLLOVER, OTHERVEST, OTHERNONVEST

Field	Type	Description
ConfirmationNumber	string	Confirmation number of the transaction
FractionalCash	Number	Cash for fractional units (used for stock splits)
IncomeType	IncomeType	Type of investment income: CGLONG (capital gains-long term), CGSHORT (capital gains-short term), MISC
OldUnits	Number	Number of shares before split
SplitRatioNumerator	Number	Split ratio numerator
SplitRatioDenominator	Number	Split ratio denominator
NewUnits	Number	Number of shares after split
SubAccountSec	SubAccountType	Sub-account security Type: CASH, MARGIN, SHORT and OTHERS
SubAccountFund	SubAccountType	From which account money came in: CASH, MARGIN, SHORT and OTHERS
LoanId	string	For 401k accounts only. This indicates the transaction was due to a loan or a loan repayment.
LoanPrincipal	Number	How much loan pre-payment is principal
LoanInterest	Number	How much loan pre-payment is interest
PayrollDate	Timestamp	The date for the 401k transaction was obtained in payroll
PriorYearContrib	Boolean	Indicates this buy was made using prior years contribution. TRUE or FALSE
Withholding	Number	Federal tax withholding
TaxExempt	Boolean	Tax-exempt transaction TRUE or FALSE
Gain	Number	For sales
StateWithholding	Number	State tax withholding
Penalty	Number	Indicates amount withheld due to a penalty
RunningBalance	Number	Running balance of the position
UnitPrice	Number	Price per commonly-quoted unit. Does not include markup/markdown, unitprice. Share price for stocks, mutual funds, and others. Percentage of par for bonds. Per share (not contract) for options.
Units	Number	For security-based actions other than stock splits, quantity. Shares for stocks, mutual funds, and others. Face value for bonds. Contracts for options.
UnitType	UnitType	SHARES, CURRENCY
TransactionReason	TransactionReason	Reason for this transaction; CALL (the debt was called), SELL (the debt was sold), MATURITY (the debt reached maturity)

13.24. LineItem Entity

Field	Type	Description
Description	string *required*	The description of the line item

Field	Type	Description
Amount	Number *required*	The amount of money attributable to this line item
CheckNumber	int	Check number
Memo	String255	Secondary item description
Reference	string	A reference number
ImageIds	Array of string	Array of image identifiers (unique to transaction) used to retrieve images of check or transaction receipt

13.25. LoanAccount Entity

Extends and inherits all fields from Account.

Field	Type	Description
BalanceAsOf	Timestamp *required*	As-of date for balances
PrincipalBalance	Number *required*	Principal balance of loan
EscrowBalance	Number	Escrow balance of loan
OriginalPrincipal	Number *required*	Original principal of loan
OriginatingDate	Timestamp	Loan origination date
LoanTerm	int *required*	Term of loan in months
TotalNumberOfPayments	int *required*	Total number of payments
NextPaymentAmount	Number	Amount of next payment
NextPaymentDate	Timestamp	Date of next payment
PaymentFrequency	PaymentFrequency *required*	DAILY, WEEKLY, BIWEEKLY, SEMIMONTHLY, MONTHLY, SEMIANNUALLY, ANNUALLY
CompoundingPeriod	CompoundingPeriod	DAILY, WEEKLY, BIWEEKLY, SEMIMONTHLY, MONTHLY, SEMIANNUALLY, ANNUALLY
PayoffAmount	Number	Payoff amount
LastPaymentAmount	Number	Last payment amount
LastPaymentDate	Timestamp	Last payment date
MaturityDate	Timestamp	Maturity date
InterestPaidYearToDate	Number	Interest paid year to date
Transactions	Array of LoanTransaction	

13.26. LoanTransaction Entity

Extends and inherits all fields from Transaction.

Field	Type	Description
TransactionType	LoanTransactionType *required*	PAYMENT, FEE, ADJUSTMENT, INTEREST
PaymentDetails	PaymentDetails	Breakdown of payment details

13.27. LocAccount Entity

Extends and inherits all fields from Account.

Field	Type	Description
BalanceAsOf	Timestamp *required*	As-of date of balances
CreditLine	Number *required*	Credit limit
AvailableCredit	Number *required*	Available credit
NextPaymentAmount	Number *required*	Amount of next payment
NextPaymentDate	Timestamp *required*	Due date of next payment
PrincipalBalance	Number *required*	Principal balance
CurrentBalance	Number *required*	Current balance LOC
MinimumPaymentAmount	Number	Minimum payment amount
LastPaymentAmount	Number	Last payment amount
LastPaymentDate	Timestamp	Last payment date
PointsAccrued	Number	Points accrued
CurrentRewardsBalance	Number	Current rewards balance
PointsRedeemed	Number	Points redeemed
PurchasesApr	Number	Purchases APR
AdvancesApr	Number	Advances APR
CashAdvanceLimit	Number	Cash advance limit
AvailableCash	Number	Available cash
FinanceCharges	Number	Finance charges
Transactions	Array of LocTransaction	

13.28. LocTransaction Entity

A line of credit transaction.

Extends and inherits all fields from Transaction.

Field	Type	Description
TransactionType	LocTransactionType *required*	CHECK, WITHDRAWAL, PAYMENT, FEE, ADJUSTMENT, INTEREST
CheckNumber	int	Check number
PaymentDetails	PaymentDetails	Breakdown of payment details

13.29. MutualFundSecurity Entity

Field	Type	Description
MutualFundType	MutualFundType	Mutual fund type. OPENEND, CLOSEEND, OTHER
UnitsStreet	Number	Units in the FI's street name, positive quantity
UnitsUser	Number	Units in user's name directly, positive quantity
ReinvestDividends	Boolean	Reinvest dividends
ReinvestCapitalGains	Boolean	Reinvest capital gains
Yield	Number	Current yield reported as portion of the fund's assets
YieldAsOfDate	Timestamp	As-of date for yield value

13.30. OpenOrder Entity

Field	Type	Description
OrderId	Identifier *required*	Long term persistent identity of the order. Id for this order transaction.
SecurityId	string	Unique identifier of security
SecurityIdType	SecurityIdType	Security identifier type
Symbol	string *required*	Market symbol
Description	string	Description of order
Units	Number *required*	Number of units (shares or bonds etc).
OrderType	OrderType *required*	Type of order BUY, SELL, BUYTOCOVER, BUYTOOPEN, SELLTOCOVER, SELLTOOPEN, SELLSHORT, SELLCLOSE
OrderDate	Timestamp *required*	Order date
UnitPrice	Number	Unit price
UnitType	UnitType	Type of unit SHARES, CURRENCY
OrderDuration	OrderDuration	This order is good for DAY, GOODTILLCANCEL, IMMEDIATE
SubAccount	SubAccountType	CASH, MARGIN, SHORT, OTHER
LimitPrice	Number	Limit price
StopPrice	Number	Stop price

Field	Type	Description
Inv401kSource	Inv401kSourceType	For 401(k) accounts, source of money for this order. PRETAX, AFTERTAX, MATCH, PROFITSHARING, ROLLOVER, OTHERVEST, OTHERNONVEST. Default if not present is OTHERNONVEST.

13.31. OptionSecurity Entity

Field	Type	Description
Secured	Secured	How the option is secured. NAKED, COVERED.
OptionType	OptionType	Option type: PUT = put, CALL = call
StrikePrice	Number	Strike price / Unit price
ExpireDate	Timestamp	Expiration date of option
SharesPerContract	Number	Shares per contract

13.32. OtherSecurity Entity

Field	Type	Description
TypeDescription	string	Description of Other Security

13.33. PaymentDetails Entity

Field	Type	Description
PrincipalAmount	Number	The amount of payment applied to principal
InterestAmount	Number	The amount of payment applied to interest
InsuranceAmount	Number	The amount of payment applied to life/ health/accident insurance on the loan
EscrowAmount	Number	The amount of payment applied to escrow
PmiAmount	Number	The amount of payment applied to PMI
FeesAmount	Number	The amount of payment applied to fees

13.34. PlannedAvailability Entity

Field	Type	Description
Status	string *required*	
StatusShortDesc	string *required*	
StatusStartDate	Timestamp *required*	
StatusEndDate	Timestamp *required*	

13.35. Portion Entity

Field	Type	Description
AssetClass	AssetClass	DOMESTICBOND, INTLBOND, LARGESTOCK, SMALLSTOCK, INTLSTOCK, MONEYMARKET, OTHER
Percent	Number	Percentage of asset class that falls under this asset

13.36. SingleAccountDetailsRequest Entity

Field	Type	Description
AccountId	string *required*	Account identifier
StartTime	Timestamp	Start time for use in retrieval; ISO 8601 date including zone indicator or combined date time including zone indicator
EndTime	Timestamp	End time for use in retrieval; ISO 8601 date including zone indicator or combined date time including zone indicator
Page	Number	Page number (applicable only if the server has indicated that the collection is paginated)

13.37. SingleAccountDetailsRequestList Entity

Field	Type	Description
SingleAccountDetailsRequest	Array of SingleAccountDetailsRequest	

13.38. Statement Entity

Field	Type	Description
AccountId	Identifier *required*	Corresponds to AccountId in Account entity
StatementId	Identifier *required*	Long-term persistent identity of the statement
StatementDate	Timestamp *required*	Date of the statement
Description	string	Description of statement

13.39. Statements Entity

Field	Type	Description
Total	int	Total number of results in this collection across all pages
TotalPages	int	Total number of pages
Page	int	Current page number
Statement	Array of Statement	Statements

13.40. StockSecurity Entity

Field	Type	Description
UnitsStreet	Number	Units in the FI's street name, positive quantity
UnitsUser	Number	Units in user's name directly, positive quantity
ReinvestDividends	Boolean	Reinvest dividends
StockType	StockType	COMMON, PREFERRED, CONVERTIBLE, OTHER
Yield	Number	Current yield
YieldAsOfDate	Timestamp	Yield as-of date

13.41. SweepSecurity Entity

Field	Type	Description
CurrentBalance	Number *required*	Balance of funds in account
AvailableBalance	Number	Balance of funds available for use
BalanceAsOf	Timestamp *required*	As-of date of balances
Checks	Boolean	Whether or not checks can be written on the account

13.42. TaxLot Entity

Field	Type	Description
OriginalPurchaseDate	Timestamp	Lot acquired date
Quantity	Number	Lot quantity
PurchasedPrice	Number	Original purchase price
CostBasis	Number	Total amount of money spent acquiring this lot including any fees or commission expenses incurred
CurrentValue	Number	Lot market value
PositionType	PositionType	LONG, SHORT

13.43. TelephoneNumber Entity

Field	Type	Description
Type	TelephoneNumberType	HOME, BUSINESS, CELL, FAX
Country	String3	Country calling codes defined by ITU-T recommendations E.123 and E.164
Number	String10 *required*	Telephone number

13.44. Transaction Entity

Field	Type	Description
AccountId	Identifier *required*	Corresponds to AccountId in Account
TransactionId	Identifier *required*	Long term persistent identity of the transaction (unique to account)
ReferenceTransactionId	Identifier	For reverse postings, the identity of the transaction being reversed. For the correction transaction, the identity of the reversing post. For credit card posting transactions, the identity of the authorization transaction.
PostedTimestamp	Timestamp	The date and time that the transaction was posted to the account. If not provided then TransactionTimestamp can be used as PostedTimeStamp.
TransactionTimestamp	Timestamp *required*	The date and time that the transaction was added to the server backend systems
Description	string *required*	The description of the transaction
Memo	String255	Secondary transaction description
DebitCreditMemo	DebitCreditMemo	DEBIT, CREDIT, MEMO
Category	string	Transaction category, preferably MCC or SIC.
SubCategory	string	Transaction category detail
Reference	string	A tracking reference identifier
Status	TransactionStatus	PENDING, MEMO, POSTED, AUTHORIZATION
Amount	Number *required*	The amount of money in the account currency
ForeignAmount	Number	The amount of money in the foreign currency
ForeignCurrency	Iso4217Code	The ISO 4217 code of the foreign currency
ImageIds	Array of string	Array of Image Identifiers (unique to Transaction) used to retrieve Images of check or transaction receipt
LineItem	Array of LineItem	Breakdown of the transaction details
FiAttributes	Array of FiAttribute	Array of FI-specific attributes

13.45. Transactions Entity

Optionally paginated array of transactions.

Field	Type	Description
Total	int	Total number of results in this collection across all pages
TotalPages	int	Total number of pages
Page	int	Current page number

Field	Type	Description
zero or more of **DepositTransaction**, **InvestmentTransaction**, **LoanTransaction**, or **LocTransaction**	DepositTransaction, InvestmentTransaction, LoanTransaction, or LocTransaction	An array of transactions with entity types dependent on the account type (deposit, investment, loan, or line of credit)

13.46. Transfer Entity

Field	Type	Description
TransferId	Identifier *required*	Client generated, long-term persistent identity of the transfer action. This ID should be maintained and returned by institution.
FromAccountId	Identifier *required*	Long-term persistent identity of the source account
ToAccountId	Identifier *required*	Long-term persistent identity of the destination account
Amount	Number *required*	Positive amount of money to be transferred
Memo	String255	User-entered reason for transfer
PaymentDetails	PaymentDetails	Payment details

13.47. TransferStatus Entity

Field	Type	Description
TransferId	Identifier *required*	Client generated, long-term persistent identity of the transfer action. This ID should be maintained and returned by institution.
ReferenceId	Identifier *required*	Long term persistent identifier for transfer attempt
Status	TransferStatusStatus *required*	SUCCESS, NOFUNDS, PENDING, FAILURE
TransferDate	Timestamp *required*	Date of transfer attempt

13.48. Vesting Entity

Field	Type	Description
VestingDate	Timestamp	Vesting date
Symbol	string	Security symbol
StrikePrice	Number	Strike price
VestingPercentage	Number	Vesting percentage
OtherVestAmount	Number	Other vest amount
OtherVestPercentage	Number	Other vest percentage
VestedBalance	Number	Vested balance
UnVestedBalance	Number	Unvested balance

Field	Type	Description
VestedQuantity	Number	Vested quantity
UnVestedQuantity	Number	Unvested quantity

14. Simple Types

Simple types are specified in the accompanying XML schema document `durable-data-api.xsd`. All defined simple types inherit from the following basic types.

Name	Description
string	A string of Unicode characters
int	A 32-bit signed integer
decimal	An arbitrary-precision decimal number
dateTime	A string specifying a date and time

Many enumerations are implemented without enforcement of values to accommodate categorizations that are not covered by this document. These are described as having **Suggested Values**. Enumerations whose values are enforced are described as having **Valid Values**.

14.1. AccountStatus

Base Type

string

Suggested Values

CLOSED
DELINQUENT
NEGATIVECURRENTBALANCE
OPEN
PAID
PENDINGCLOSE
PENDINGOPEN

14.2. AccountType

Base Type

string

Suggested Values

401A
401K
403B
529
AUTOLOAN
CD
CHARGE
CHECKING
COMMERCIALLINEOFCREDIT
COMMERCIALLOAN
COVERDELL
CREDITCARD
ESCROW

ESOP
GUARDIAN
HOMEEQUITYLOAN
HOMELINEOFCREDIT
INSITUTIONALTRUST
INSTALLMENT
IRA
KEOGH
LINEOFCREDIT
LOAN
MILATARYLOAN
MONEYMARKET
MORTGAGE
PERSONALLOAN
ROLLOVER
ROTH
SARSEP
SAVINGS
SMBLOAN
STUDENTLOAN
TAXABLE
TDA
TRUST
UGMA
UTMA

14.3. AssetClass

Base Type

string

Suggested Values

DOMESTICBOND
INTLBOND
INTLSTOCK
LARGESTOCK
MONEYMARKET
OTHER
SMALLSTOCK

14.4. BalanceType

Base Type

string

Valid Values

ASSET
LIABILITY

14.5. Boolean

'true' or 'false'.

Base Type

boolean

Pattern

`true`

Pattern

`false`

14.6. CallType

Base Type

string

Suggested Values

CALL
MATURITY
PREFUND
PUT

14.7. CompoundingPeriod

Base Type

string

Suggested Values

ANNUALLY
BIWEEKLY
DAILY
MONTHLY
SEMIANNUALLY
SEMIMONTHLY
WEEKLY

14.8. CouponMatureFrequency

Base Type

string

Suggested Values

ANNUAL
MONTHLY
OTHER
QUARTERLY
SEMIANNUAL

14.9. DebitCreditMemo

Base Type

string

Suggested Values

CREDIT
DEBIT
MEMO

14.10. DebtClass

Base Type

string

Suggested Values

CORPORATE
MUNICIPAL
OTHER
TREASURY

14.11. DebtType

Base Type

string

Suggested Values

COUPON
ZERO

14.12. DeliveryAddressType

Base Type

string

Suggested Values

BUSINESS
HOME
MAILING

14.13. DepositTransactionType

Base Type

string

Suggested Values

ADJUSTMENT
ATMDEPOSIT
ATMWITHDRAWAL
BILLPAYMENT
CHECK
DEPOSIT
DIRECTDEPOSIT
DIVIDEND
FEE
INTEREST
POSCREDIT
POSDEBIT
TRANSFER
WITHDRAWAL

14.14. HeldInAccount

Base Type

string

Suggested Values

CASH
MARGIN
OTHER
SHORT

14.15. HoldingSubType

Base Type

string

Suggested Values

CASH
MONEYMARKET

14.16. HoldingType

Base Type

string

Suggested Values

ANNUITY
BOND
CD
MUTUALFUND
OPTIONS
STOCK

14.17. Identifier

Base Type

string

Maximum Length

128

14.18. IncomeType

Base Type

string

Suggested Values

CGLONG
CGSHORT
MISC

14.19. InterestRateType

Base Type

string

Suggested Values

FIXED
VARIABLE

14.20. Inv401kSourceType

Base Type

string

Suggested Values

AFTERTAX
MATCH
OTHERNONVEST
OTHERVEST
PRETAX
PROFITSHARING
ROLLOVER

14.21. InvestmentBalanceType

Base Type

string

Suggested Values

AMOUNT
PERCENTAGE

14.22. InvestmentTransactionType

Base Type

string

Suggested Values

ADJUSTMENT
ATM
CASH
CHECK
CLOSURE
CLOSUREOPT
CONTRIBUTION
DEP
DIRECTDEBIT
DIRECTDEP
DIV
DIVIDEND
DIVIDENDREINVEST
EXPENSE
FEE
INCOME
INTEREST
INVEXPENSE
JRNLFUND
JRNLSEC
MARGININTEREST
OPTIONEXERCISE
OPTIONEXPIRATION
OTHER
PAYMENT
POS
PURCHASED
PURCHASEDTOCOVER
PURCHASETOCLOSE
PURCHASETOOPEN
REINVESTOFINCOME
REPEATPMT
RETURNOFCAPITAL
SOLD
SOLDTOCLOSE

SOLDTOOPEN
SPLIT
SRVCHG
TRANSFER
XFER

14.23. Iso3166CountryCode

ISO 3166 Codes for the representation of names of countries and their subdivisions.

Base Type

string

Valid Values

AD
AE
AF
AG
AI
AL
AM
AN
AO
AQ
AR
AS
AT
AU
AW
AX
AZ
BA
BB
BD
BE
BF
BG
BH
BI
BJ
BM
BN
BO
BR
BS
BT
BV
BW
BY
BZ
CA
CC
CD
CF
CG
CH
CI
CK
CL

CM
CN
CO
CR
CS
CU
CV
CX
CY
CZ
DE
DJ
DK
DM
DO
DZ
EC
EE
EG
EH
ER
ES
ET
FI
FJ
FK
FM
FO
FR
GA
GB
GD
GE
GF
GG
GH
GI
GL
GM
GN
GP
GQ
GR
GS
GT
GU
GW
GY
HK
HM
HN
HR
HT
HU
ID
IE
IL
IM
IN

IO
IQ
IR
IS
IT
JE
JM
JO
JP
KE
KG
KH
KI
KM
KN
KP
KR
KW
KY
KZ
LA
LB
LC
LI
LK
LR
LS
LT
LU
LV
LY
MA
MC
MD
MG
MH
MK
ML
MM
MN
MO
MP
MQ
MR
MS
MT
MU
MV
MW
MX
MY
MZ
NA
NC
NE
NF
NG
NI
NL

NO
NP
NR
NU
NZ
OM
PA
PE
PF
PG
PH
PK
PL
PM
PN
PR
PS
PT
PW
PY
QA
RE
RO
RU
RW
SA
SB
SC
SD
SE
SG
SH
SI
SJ
SK
SL
SM
SN
SO
SR
ST
SV
SY
SZ
TC
TD
TF
TG
TH
TJ
TK
TL
TM
TN
TO
TR
TT
TV
TW

TZ
UA
UG
UM
US
UY
UZ
VA
VC
VE
VG
VI
VN
VU
WF
WS
YE
YT
ZA
ZM
ZW

14.24. Iso4217Code

Base Type

string

Valid Values

AED
AFN
ALL
AMD
ANG
AOA
ARS
AUD
AWG
AZN
BAM
BBD
BDT
BGN
BHD
BIF
BMD
BND
BOB
BOV
BRL
BSD
BTN
BWP
BYR
BZD
CAD
CDF
CHE
CHF
CHW

CLF
CLP
CNY
COP
COU
CRC
CUC
CUP
CVE
CZK
DJF
DKK
DOP
DZD
EGP
ERN
ETB
EUR
FJD
FKP
GBP
GEL
GHS
GIP
GMD
GNF
GTQ
GYD
HKD
HNL
HRK
HTG
HUF
IDR
ILS
INR
IQD
IRR
ISK
JMD
JOD
JPY
KES
KGS
KHR
KMF
KPW
KRW
KWD
KYD
KZT
LAK
LBP
LKR
LRD
LSL
LYD
MAD
MDL

MGA
MKD
MMK
MNT
MOP
MRO
MUR
MVR
MWK
MXN
MXV
MYR
MZN
NAD
NGN
NIO
NOK
NPR
NZD
OMR
PAB
PEN
PGK
PHP
PKR
PLN
PYG
QAR
RON
RSD
RUB
RWF
SAR
SBD
SCR
SDG
SEK
SGD
SHP
SLL
SOS
SRD
SSP
STD
SVC
SYP
SZL
THB
TJS
TMT
TND
TOP
TRY
TTD
TWD
TZS
UAH
UGX
USD

USN
UYI
UYU
UZS
VEF
VND
VUV
WST
XAF
XAG
XAU
XBA
XBB
XBC
XBD
XCD
XDR
XOF
XPD
XPF
XPT
XSU
XTS
XUA
XXX
YER
ZAR
ZMW
ZWL

14.25. LoanPaymentFrequency

Base Type

string

Suggested Values

ANNUALLY
BIMONTHLY
BIWEEKLY
FOURWEEKS
MONTHLY
OTHER
QUARTERLY
SEMIANNUALLY
TWICEMONTHLY
WEEKLY

14.26. LoanTransactionType

Base Type

string

Suggested Values

ADJUSTMENT
FEE
INTEREST
PAYMENT

14.27. LocTransactionType

Base Type

string

Suggested Values

ADJUSTMENT
CHECK
FEE
INTEREST
PAYMENT
WITHDRAWAL

14.28. MessageFormat

Base Type

string

Valid Values

JSON
XML

14.29. MutualFundType

Base Type

string

Suggested Values

CLOSEEND
OPENEND
OTHER

14.30. Number

Base Type

decimal

14.31. OptionType

Base Type

string

Suggested Values

CALL
PUT

14.32. OrderDuration

Base Type

string

Suggested Values

DAY
GOODTILLCANCEL
IMMEDIATE

14.33. OrderType

Base Type

string

Suggested Values

BUY
BUYTOCOVER
BUYTOOPEN
SELL
SELLCLOSE
SELLSHORT
SELLTOCOVER
SELLTOOPEN

14.34. PaymentFrequency

Base Type

string

Suggested Values

ANNUALLY
BIWEEKLY
DAILY
MONTHLY
SEMIANNUALLY
SEMIMONTHLY
WEEKLY

14.35. PositionType

Base Type

string

Suggested Values

LONG
SHORT

14.36. Secured

Base Type

string

Suggested Values

COVERED
NAKED

14.37. SecurityIdType

Base Type

string

Suggested Values

CUSIP
ISIN
SEDOL

SICC
VALOR
WKN

14.38. SecurityType

Base Type

string

Suggested Values

DEBT
MUTUALFUND
OPTION
OTHER
STOCK
SWEEP

14.39. StockType

Base Type

string

Suggested Values

COMMON
CONVERTIBLE
OTHER
PREFERRED

14.40. String10

Base Type

string

Maximum Length

10

14.41. String2

Base Type

string

Maximum Length

2

14.42. String255

Base Type

string

Maximum Length

255

14.43. String3

Base Type

string

Maximum Length

3

14.44. String64

Base Type

string

Maximum Length

64

14.45. String9

Base Type

string

Maximum Length

9

14.46. SubAccountType

Base Type

string

Suggested Values

CASH
MARGIN
OTHERS
SHORT

14.47. TelephoneNumberType

Base Type

string

Suggested Values

BUSINESS
CELL
FAX
HOME

14.48. Timestamp

ISO 8601 date time with milliseconds in UTC time zone.

Base Type

dateTime

Pattern

```
\d{4}\-\d\d\-\d\dT\d\d:\d\d:\d\d\.\d\d\dZ
```

14.49. TransactionReason

Base Type

string

Suggested Values

CALL
MATURITY
SELL

14.50. TransactionStatus

Base Type

string

Suggested Values

AUTHORIZATION
MEMO
PENDING
POSTED

14.51. TransferStatusStatus

Base Type

string

Suggested Values

FAILURE
NOFUNDS
PENDING
SUCCESS

14.52. UnitType

Base Type

string

Suggested Values

CURRENCY
SHARES