

NBFC - Account Aggregator (AA) API Specification

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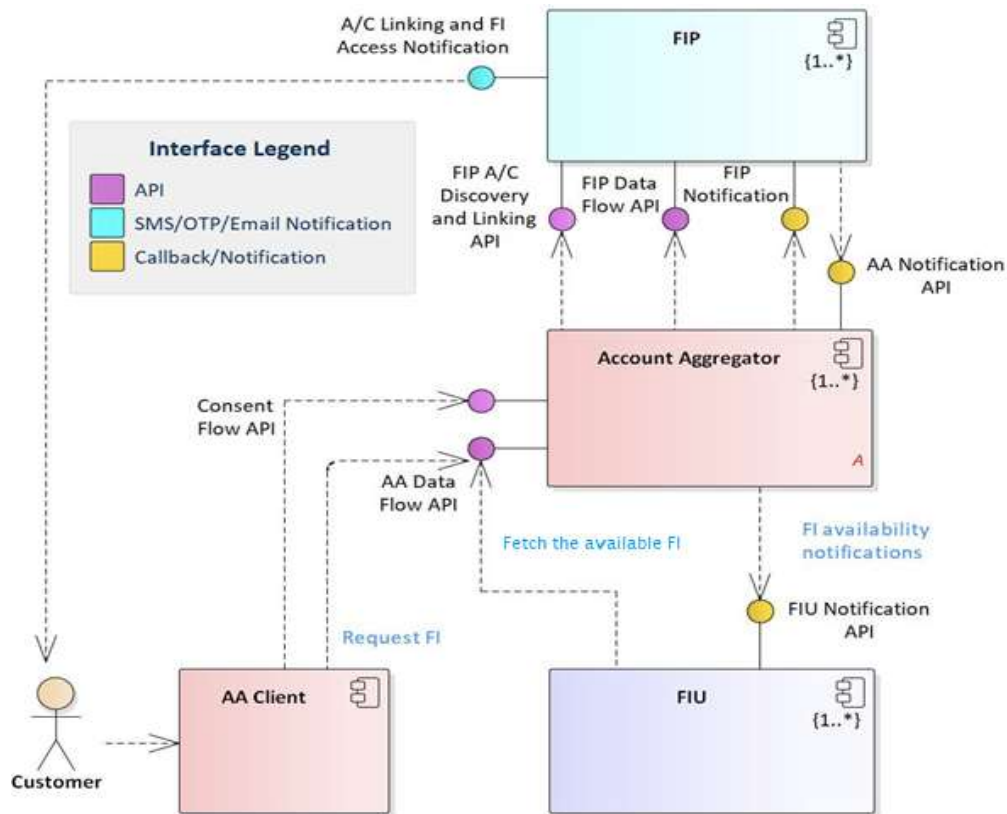
I. Introduction

The Reserve Bank of India (RBI) has published the Master Direction¹ for the non-banking financial companies (NBFC) undertaking the business of Account Aggregator (AA). As defined in section 3(1) (iv) of the Master Direction¹, the business of an account aggregator means the business of providing under a contract, the service of, retrieving or collecting such financial information pertaining to its customer, as may be specified by RBI from time to time; and consolidating, organizing and presenting such information to the customer or any other financial information user as may be specified by RBI.

High-level Architecture

AA acts as an intermediary and helps connect the Customer to multiple Financial Information Provider (FIP)s through standardized API interfaces. In this process, the NBFC-AA ecosystem needs an interoperable, consent-driven architecture, and a set of standard APIs that will facilitate secure, seamless and consented sharing of various kinds of financial information. The below diagram is the high level architecture which shows various interfaces and system interactions in the AA ecosystem as follows:

¹ Master Direction- Non-Banking Financial Company - Account Aggregator (Reserve Bank) Directions, 09 Nov 2017, https://rbi.org.in/Scripts/BS_ViewMasDirections.aspx?id=10598



As shown above, the Customer interacts with the AA for requesting services. The AA client component interfaces with the AA either directly or via the API exposed by the AA to facilitate this interaction. Further, the Customer interacts with the AA to link accounts and generates consent. All the interactions of account linking and consent management must happen directly between the Customer and the AA through AA application or AA Client.

The AA Client, provided by AA, is authorized software that interacts with the AA service. It may be implemented as a library, Software Development Kit (SDK) or might interact via direct authorized AA API calls. The AA Client could be a web-based application, a mobile-based application offered by the AA, or a SDK/library with limited data flow. AA is the owner of the AA Client.

The architecture uses an asynchronous API design by defining the callback notification APIs. This design approach facilitates not to wait for a response from the API provider, thereby decoupling the execution of when the request is made and when the response is received by the requester.

As shown in the high-level architecture diagram above, the following Interfaces have been defined:

Interface	Summary
FIP A/C Linking API	<p>This API enables the linking of FIP account(s) of the Customer with an AA account.</p> <p>A linked FI account can only be associated using the consent artefact, and the Customer then allows the FIU to access his/her financial information.</p>
FIP Data Flow API	<p>This API provides an interface for AA to collect financial information of a Customer programmatically. The collected information is based on a digitally signed consent artefact submitted in the request made by the FIP.</p>
A/C Linking and FI Access Notification	<p>This interface is hosted by the FIP to notify the Customer about the A/C linking events and data access request.</p>
AA Callback API	<p>This callback interface is hosted by AA to receive an asynchronous status update notification from FIP based on the aggregation request.</p>
AA Data Flow API	<p>A FIU uses this AA interface in order to receive financial information based on a Customer consent.</p>
Consent Request	<p>This AA interface collects Customer consent and helps in validating that the consent request indeed came from that particular Customer.</p>
Consent Management	<p>This interface, hosted by AA, enables the management of all consent artefacts throughout its lifecycle.</p>
FIU Callback API	<p>This callback interface, hosted by an Financial Information User (FIU), enables the reception of the asynchronous status update notification on the aggregation request.</p>

II. High-level Specifications

The high level specifications of the AA ecosystem have been categorized into the following flows.

1. Account discovery and linking flow
2. Consent flow
3. Consent handle management flow
4. FI data flow
5. Notification flow
6. Monitoring flow

Below are the actions performed by the participating entities with respect to the categories

Category	AA	FIP	FIU
Account Discovery and Linking	n/a	<ul style="list-style-type: none"> • Account Discovery • Account Linking/Delinking • Authenticating Link/Delink Request 	n/a
Consent	<ul style="list-style-type: none"> • Consent Request 	<ul style="list-style-type: none"> • Posting Consent 	n/a
Consent Handle Management	<ul style="list-style-type: none"> • Consent Status Request • Getting Consent 	n/a	n/a
FI Data Flow	<ul style="list-style-type: none"> • FI Data - Request • FI Data - Fetch 	<ul style="list-style-type: none"> • FI Data - Request • FI Data - Fetch 	n/a
Notification	<ul style="list-style-type: none"> • Linking Status • Consent Status • FI Data Status 	<ul style="list-style-type: none"> • Consent Status 	<ul style="list-style-type: none"> • Consent Status • FI Data Status
Monitoring	<ul style="list-style-type: none"> • Heartbeat API 	<ul style="list-style-type: none"> • Heartbeat API 	n/a

n/a - API is not applicable

Account Aggregator (AA) APIs

The description of AA APIs is given as follows:

Entity		Account Aggregator
Method	API Path	Description
Consent		
Consent Request		
POST	/Consents	<p>This API is intended for AA Client to request the generation of digitally signed consent artefacts. The customer uses the AA application to select accounts and approve the consent generation. Once the customer approves the consent request on the AA application, AA generates the digitally signed consent artefact.</p> <p>Note - The AA Client never sees the account of the customer, nor directly participates in the consent generation.</p>
Consent Handle Management		
Consent Status Request		
GET	/Consent/handle/{consent Handle}	This API is intended for checking the status of a previously submitted consent artefact creation requests.
Get Consent		
GET	/Consent/{id}	This API is intended for fetching the information associated with the specific consent id

FI Data Flow		
FI Data - Request		
POST	/FI/request	The FIU or the customer submits the consent IDs required for fetching financial information from the FIP(s). A set of session IDs are generated and returned which enables the FIU, or the Customer, to fetch the information from the AA, once it is available.
FI Data - Fetch		
GET	/FI/fetch/{sessionId}	Once the AA receives the digitally signed notification from the FIP, then it will fetch the financial information from the FIP(s).
Notifications		
Consent Status		
POST	/Consent/Notification	This API is used by the FIPs and FIUs for submitting the notifications corresponding to the events generated during consent-flow.
FI Data Status		
POST	/FI/Notification	This API handles the notifications corresponding to the events generated during data-flow.
Linking Status		
POST	/Account/link/Notification	This API handles the notifications corresponding to the events generated during account linkage flow.
Monitoring		

Heartbeat API		
GET	/Heartbeat	This is the monitoring API Interface for checking the service availability of AA.

Financial Information Provider (FIP) APIs

The description of FIP APIs is given as follows:

Entity		Financial Information Provider
Method	API Path	Description
Account Discovery and Linking		
Account Discovery		
POST	/Accounts/discover	This API enables the AA to discover accounts belonging to a Customer based on the Customer identifiers. A set of masked account information and corresponding link reference number for each discovered account, is returned based on identifier matching logic at FIP.
Account Linking		
POST	/Accounts/link	This API is used for initiating an account link request to link selected account(s) with the AA customer address.
Account Delinking		

DELETE	/Accounts/link	This API is used to delete a previously established account linkage to the customer's profile. Once deleted, the account aggregation function will neither use these accounts nor perform any data flow on them.
Authenticate Link/Delink Request		
GET	/Accounts/link/{RefNumber} / {Token}	This API is used only in the case of token-based authentication for linking or delinking the accounts. The AA submits the token (received from the customer) to the FIP so that account linkage or de-linkage can be completed. The method is used to submit the token/OTP back to FIP so account linkage or de-linkage can be completed. This is in case the FIP uses a token-based authenticator. In the case of FID direct authenticator, this method will not be used.
Consent		
Post Consent		
POST	/Consent	This API enables the AA to send the consent artefact to the FIP on consent creation.
FI Data Flow		
FI Data - Request		
POST	/FI/request	This API enables the FIP to validate an AA's financial information request before fetching the data. FIP also verifies the AA consent request and provides consent to fetch the data.

FI Data - Fetch		
GET	/FI/fetch/{SessionId}	This API enables the FIP to fetch the financial information against a given SessionID. It is called after the AA has received the notification from the FIP.
Notification		
Consent Status		
POST	/Consent/Notification	This API handles the notifications corresponding to the events generated during consent flow like consent created, revoked, paused, resumed and expired.
Monitoring		
Heartbeat API		
GET	/Heartbeat	This API enables the AAs to check the service availability of FIPs.

Financial Information User (FIU) APIs

The description of FIU APIs is given as follows:

Entity		Financial Information User
Method	API Path	Description
Notification		
Consent Status		
POST	/Consent/Notification	This API handles the notifications corresponding to events generated during the consent flow.

FI Data Status		
POST	/FI/Notification	This API handles the notifications corresponding to the events generated during data-flow.

For further illustrative information on NBFC-AA ecosystem API Specification, please refer to <https://api.rebit.org.in/>

III. Financial Information (FI) Definition

The Account Aggregator (AA) ecosystem supports multiple types of FI as defined in Section 3 of the Master Direction¹. The purpose of developing FI definitions is to enable the interoperability between the participating entities in AA ecosystem. The FI definition has the following purposes:

- a. **Data description:** The definition provides a common and uniform format of the representation of FI in terms of structure (syntax) and meaning (semantics) interoperability.
- b. **Data context:** The definition defines a minimal set of representational states of FI information corresponding to the financial information types.
- c. **Data sharing:** The definition provides semantic interoperability in the NBFC-AA ecosystem.
- d. **Data harmonization:** The definition enables a common format for analysing, viewing, and processing the transaction of financial information.

The structure of FI type definition adheres with the consent definition that has the following sections:

- **Profile:** This includes the basic profile of the Customer having details such as account owner information, masked account number and linked account reference numbers, type of account specific to the FI type and other generic details as might be pertinent for the specified FI type.
- **Summary:** This includes the value of the account, term of the deposits, if relevant and any other data that summarizes the funds in the account.
- **Transactions:** This include the transaction details that are posted in an account.

In this process, the FI type information is defined in XML (Extended Markup Language) format will be validated against the corresponding XSD (XML Schema Definition).

The XML structure of Financial Instrument is depicted below:

```
<Account type="">  
  <Profile />  
  <Summary />  
  <Transactions />  
</Account>
```

For further illustrative information, please refer to <https://api.rebit.org.in/> or email: aa-api@rebit.org.in.