

**Mashreq CPRA Rest API**

**Version History**

| Version No. | Release Date | Released By | Description of Changes |
| --- | --- | --- | --- |
| 1.1 | 08-Jul-2020 | Tushar Amrutkar | Initial Draft. |
| 1.2 | 10-Jul-2020 | Akshay V | Response code changes |
| 1.3 | 21-Jul-2020 | Tushar A | Addition of Authentication Mechanism, inconsistency error codes and specifications of new API getCRRinfo |
| 1.4 | 27-Jul-2020 | Tushar A | Addition of CIF in the API messages |
|  |  |  |  |

Table of Contents

[1 Introduction 4](#_Toc47083929)

[2 Process Flow 4](#_Toc47083930)

[3 API Specifications 5](#_Toc47083931)

[3.1 Authentication Mechanism 5](#_Toc47083932)

[3.2 Header 6](#_Toc47083933)

[3.2.1 Request Header 6](#_Toc47083934)

[3.2.2 Response Header 6](#_Toc47083935)

[3.2.3 Response Trailer 7](#_Toc47083936)

[3.3 calculateCRR Method 7](#_Toc47083937)

[3.3.1 Request Format 7](#_Toc47083938)

[3.3.2 Response Format 9](#_Toc47083939)

[3.4 getCRRinfo Method 10](#_Toc47083940)

[3.4.1 Request Format 10](#_Toc47083941)

[3.4.2 Response Format 11](#_Toc47083942)

[3.5 Response Codes: 13](#_Toc47083943)

[3.5.1 CRR Response Code 13](#_Toc47083944)

[3.5.2 API Response Codes 14](#_Toc47083945)

# Introduction

FinIQ REST API document describes the process flow and REST API request response formats. The document starts with a high-level explanation of the task that should be performed during an API connection session. It further describes the API services in details including sample input, output and possible error messages.

Session management function deals with establishment and termination of a client application’s connection session. All of the API services would fail unless an authentication session has been established.

# Process Flow

Mashreq Web Server with Hosted Services

Mashreq Mobile Channel

CRR Calculation Request

CRR Calculation Response

Get CRR past info request

Get CRR past info response

During the onboarding process, client will fill the details in questionnaire which will be used to gauge client’s risk-taking ability. Mobile channel will collect these responses and will send to FinIQ via API for calculation of risk rating. FinIQ will consume the request, calculate the rating and respond it in the same API call.

Any inconsistencies in the answers will be addressed by mobile channel while collecting the answers. FinIQ will also check for inconsistencies. If any inconsistency is found, FinIQ will respond the same. Risk rating calculation algorithm provided by Mashreq should be used in FinIQ.

System will also be used during client risk re-evaluation which has to be conducted every 2 years.

# API Specifications

Below is the list of API Services

|  |  |  |
| --- | --- | --- |
| **Functionality** | **Method** | **Description** |
| Client Risk Rating | calculateCRR | Returns the client risk rating based on the algorithm |
| Past CRR Info | getCRRinfo | Returns all the input information filled by client in the past and calculated CRR |

Note:

1. Request method for the APIs is POST

## Authentication Mechanism

APIs can be accessed only by authenticated requests. If the authentication is successful, the request will be placed in the FinIQ system, otherwise authentication failure response (error code 401) would be sent back as the response.

1. Token is a digital signature which will be generated from Private key in a secure Third Party generated keypair.

2. Mashreq will have the private key on their server which will digitally sign the token with ExtrenalReqID which is unique for each API call.

3. FinIQ will receive this token in the FinIQRequestHeader and will verify this digital signature

4. This authentication will be config based

Sample C# and Java application have been developed to test the flow and can be provided to Mashreq if needed.

## Header

### Request Header

|  |  |  |  |
| --- | --- | --- | --- |
| **Header Parameters:** FinIQRequestHeader () | | | |
| Parameter Name | Data Type | Description | Mandatory Y/N |
| EntityCode | String | Entity Code  e.g., “Dubai” for Dubai | Y |
| EntityID | String | Entity ID for the Entity Code  e.g. “4” for SG | Y |
| ExternalRequestID | String | Unique request ID for future reference  e.g. MC10000001 | Y |
| LoginID | String | User ID which should be saved against the request e.g. “JackS” | Y |
| MachineIP | String | Valid machine IP of request generator.  e.g. "192.168.20.135" | Y |
| RequestAt | String | DateTime at which request is generated.  e.g dd-MMM-yyyy hh:mm:ss tt AM/PM  "09-Oct-2017 6:13:14 PM", | Y |
| SourceSystem | String | Request sourcing system name  e.g. “MobileChannel” | Y |
| Token | String | Unique token  e.g. 55yZ6oN5RR7ozo8S9S6OFmMbD4m | Y |

### Response Header

|  |  |  |  |
| --- | --- | --- | --- |
| **Header Parameters:** FinIQRequestHeader () | | | |
| Parameter Name | Data Type | Description | Mandatory Y/N |
| EntityCode | String | Entity Code  e.g., “Dubai” for Dubai | Y |
| EntityID | String | Entity ID for the Entity Code  e.g. “4” for SG | Y |
| ExternalRequestID | String | Unique request ID for future reference  e.g. MC10000001 | Y |
| LoginID | String | User ID which should be saved against the request e.g. “JackS” | Y |
| MachineIP | String | Valid machine IP of request generator.  e.g. "192.168.20.135" | Y |
| RequestAt | String | DateTime at which request is generated.  e.g dd-MMM-yyyy hh:mm:ss tt AM/PM  "09-Oct-2017 6:13:14 PM", | Y |
| SourceSystem | String | Request sourcing system name  e.g. “MobileChannel” | Y |
| Token | String | Unique token  e.g. 55yZ6oN5RR7ozo8S9S6OFmMbD4m | Y |

### Response Trailer

|  |  |  |  |
| --- | --- | --- | --- |
| **Trailer Parameters:** FinIQResponseTrailer () | | | |
| Parameter Name | Data Type | Description | Mandatory Y/N |
| Code | String | Response Code for the request  e.g., 200 for success | Y |
| Description | String | Description for the response code  e.g. “Success” for response code 200 | Y |
| ResponseAt | String | DateTime at which response is generated.  e.g dd-MMM-yyyy hh:mm:ss tt AM/PM  "09-Oct-2017 6:13:14 PM", | Y |

## calculateCRR Method

calculateCRR method will be used to get the customer risk rating from FinIQ system based on the algorithm already input

### Request Format

The request format for calculateCRR method is as follows:

URL: [https: //xyz/FinIQService/](https://xyz/FinIQService/Swaps.svc/shares/all)CRRCalculation.svc/calculateCRR

Body of the request is in the form of array of key-value pairs. Number of key value pairs may vary according to number of questions in the questionnaire

|  |  |  |  |
| --- | --- | --- | --- |
| **Request Parameters:** CRRCalculationRequest () | | |  |
| Parameter Name | Data Type | Description | Mandatory Y/N |
| Key | String | Key will specify the parameter name.  e.g. “CIF”,”ExternalREquestID”,“Q1” etc | Y |
| Value | String | Value will specify the answer the input by client. Answer can be a xml in case of multiple selections are required in the answer  e.g. “2” will denote that client chose second option. | Y |

Sample Request:

{

   "FinIQRequestHeader":{

      "EntityCode":"SG",

      "EntityID":"4",

      "ExternalRequestID":"3072020142347",

      "LoginID":"JackS",

      "MachineIP":"192.0.0.0",

      "RequestAt":"08-Jul-2020 10:28:49 AM",

      "SourceSystem":"MobileChannel ",

“Token”:” 55yZ6oN5RR7ozo8S9S6OFmMbD4m”

   },

   "CRRCalculationRequest":[

      {

         "Key":"CIF",

         "Value":"1000001"

      },{

         "Key":"ExternalRequestID",

         "Value":"3072020142347"

      },{

         "Key":"Q1",

         "Value":"1"

      },

      {

         "Key":"Q2",

         "Value":"3"

      },

      {

         "Key":"Q3",

         "Value":"2"

      },

      {

         "Key":"Q4",

         "Value":"1"

      },

      {

         "Key":"Q5",

         "Value":"3"

      },

      {

         "Key":"Q6",

         "Value":"2"

      },

      {

         "Key":"Q7",

         "Value":"1"

      },

      {

         "Key":"Q8",

         "Value":"1"

      },

      {

         "Key":"Q9",

         "Value":"4"

      },

      {

         "Key":"Q10",

         "Value":"4"

      },

      {

         "Key":"Q11",

         "Value":"4"

      },

      {

         "Key":"Q12",

         "Value":"3"

      },

      {

         "Key":"Q13",

         "Value":"2"

      }

   {  
      "Key":"Q14",  
      "Value":"<?xml version="1.0" encoding="UTF-8"?><DocumentElement><CustomTab><Products\_customMatrix>Mutual Fund</Products\_customMatrix><KnowledgeExpert>Y</KnowledgeExpert><KnowledgeIntermediate>N</KnowledgeIntermediate><KnowledgeNil>N</KnowledgeNil><ExperienceExperienced>N</ExperienceExperienced><ExperienceIntermediate>Y</ExperienceIntermediate><ExperienceNil>N</ExperienceNil></CustomTab> <CustomTab><Products\_customMatrix>PEFund</Products\_customMatrix><KnowledgeExpert>Y</KnowledgeExpert><KnowledgeIntermediate>Y</KnowledgeIntermediate><KnowledgeNil>N</KnowledgeNil><ExperienceExperienced>Y</ExperienceExperienced><ExperienceIntermediate>Y</ExperienceIntermediate><ExperienceNil>N</ExperienceNil></CustomTab> <CustomTab><Products\_customMatrix>Bonds</Products\_customMatrix><KnowledgeExpert>Y</KnowledgeExpert><KnowledgeIntermediate>Y</KnowledgeIntermediate><KnowledgeNil>N</KnowledgeNil><ExperienceExperienced>Y</ExperienceExperienced><ExperienceIntermediate>Y</ExperienceIntermediate><ExperienceNil>N</ExperienceNil></CustomTab></DocumentElement>"  
   }

 ]

}

### Response Format

|  |  |  |  |
| --- | --- | --- | --- |
| **Response Parameters:** CRRCalculationResponse () | | |  |
| Parameter Name | Data Type | Description | Mandatory Y/N |
| CRR | String | Customer Risk Rating e.g. “R2” | Y |
| FinIQRefID | String | FinIQ Reference ID e.g. “11547” | Y |

Sample Response:

   "FinIQRequestHeader":{

      "EntityCode":"SG",

      "EntityID":"4",

      "ExternalRequestID":"3072020142347",

      "LoginID":"JackS",

      "MachineIP":"192.0.0.0",

      "RequestAt":"08-Jul-2020 10:28:49 AM",

      "SourceSystem":"MobileChannel ",

“Token”:” 55yZ6oN5RR7ozo8S9S6OFmMbD4m”

   },

    " CRRCalculationResponse ": {

       "CRR": "R2",

"FinIQRefID": "11547"

    },

    " FinIQResponseTrailer ": {

        "Code": 200,

        "Description": "Success",

        "ResponseAt": "08-Jul-2020 10:37:37 AM"

    }

}

## getCRRinfo Method

getCRRinfo method will be used to get the inputs provided by customer in the past to calculate CRR

### Request Format

The request format for getCRRinfo method is as follows:

URL: [https: //xyz/FinIQService/](https://xyz/FinIQService/Swaps.svc/shares/all)getCRRinfo.svc/getCRRinfo

Body of the request should contain the unique IDs which refer to the past customer request.

|  |  |  |  |
| --- | --- | --- | --- |
| **Request Parameters: getCRRInfoRequest** () | | |  |
| Parameter Name | Data Type | Description | Mandatory Y/N |
| InfoReferenceType | String | Specifies the type of unique request ID.  e.g. CIF, FinIQRefID, ExternalRequestID | Y |
| InfoReferenceValue | String | It will specify the value of Reference type field selected in InfoReferenceType  e.g. 10000001 | Y |

Sample Request:

{

"FinIQRequestHeader":{

      "EntityCode":"SG",

      "EntityID":"4",

      "ExternalRequestID":"4567202014234",

      "LoginID":"JackS",

      "MachineIP":"192.0.0.0",

      "RequestAt":"08-Jul-2020 10:28:49 AM",

      "SourceSystem":"MobileChannel ",

“Token”:” 55yZ6oN5RR7ozo8S9S6OFmMbD4m”

   },

   "getCRRInfoRequest":

      {

 " InfoReferenceType ":"CIF",

         " InfoReferenceValue ":"10000001"

      }

}

### Response Format

Body of the response is in the form of array of key-value pairs. Number of key value pairs may vary according to number of inputs provided earlier

|  |  |  |  |
| --- | --- | --- | --- |
| **Response Parameters:** getCRRInfoResponse () | | |  |
| Parameter Name | Data Type | Description | Mandatory Y/N |
| Key | String | Key will specify the parameter name.  e.g. “Q1” for question 1 | Y |
| Value | String | Value will specify the input as per the old request  e.g. “2” indicating client has chosen option 2 in the past | Y |

Sample Request:

{

   "FinIQRequestHeader":{

      "EntityCode":"SG",

      "EntityID":"4",

      "ExternalRequestID":"3072020142347",

      "LoginID":"JackS",

      "MachineIP":"192.0.0.0",

      "RequestAt":"08-Jul-2020 10:28:49 AM",

      "SourceSystem":"MobileChannel ",

“Token”:” 55yZ6oN5RR7ozo8S9S6OFmMbD4m”

   },

   "getCRRInfoResponse":[

      {

         "Key":"CIF",

         "Value":"1000001"

      },{

         "Key":"ExternalRequestID",

         "Value":"3072020142347"

      },{

         "Key":"Q1",

         "Value":"1"

      },

      {

         "Key":"Q2",

         "Value":"3"

      },

      {

         "Key":"Q3",

         "Value":"2"

      },

      {

         "Key":"Q4",

         "Value":"1"

      },

      {

         "Key":"Q5",

         "Value":"3"

      },

      {

         "Key":"Q6",

         "Value":"2"

      },

      {

         "Key":"Q7",

         "Value":"1"

      },

      {

         "Key":"Q8",

         "Value":"1"

      },

      {

         "Key":"Q9",

         "Value":"4"

      },

      {

         "Key":"Q10",

         "Value":"4"

      },

      {

         "Key":"Q11",

         "Value":"4"

      },

      {

         "Key":"Q12",

         "Value":"3"

      },

      {

         "Key":"Q13",

         "Value":"2"

      }

   {  
      "Key":"Q14",  
      "Value":"<?xml version="1.0" encoding="UTF-8"?><DocumentElement><CustomTab><Products\_customMatrix>Mutual Fund</Products\_customMatrix><KnowledgeExpert>Y</KnowledgeExpert><KnowledgeIntermediate>N</KnowledgeIntermediate><KnowledgeNil>N</KnowledgeNil><ExperienceExperienced>N</ExperienceExperienced><ExperienceIntermediate>Y</ExperienceIntermediate><ExperienceNil>N</ExperienceNil></CustomTab> <CustomTab><Products\_customMatrix>PEFund</Products\_customMatrix><KnowledgeExpert>Y</KnowledgeExpert><KnowledgeIntermediate>Y</KnowledgeIntermediate><KnowledgeNil>N</KnowledgeNil><ExperienceExperienced>Y</ExperienceExperienced><ExperienceIntermediate>Y</ExperienceIntermediate><ExperienceNil>N</ExperienceNil></CustomTab> <CustomTab><Products\_customMatrix>Bonds</Products\_customMatrix><KnowledgeExpert>Y</KnowledgeExpert><KnowledgeIntermediate>Y</KnowledgeIntermediate><KnowledgeNil>N</KnowledgeNil><ExperienceExperienced>Y</ExperienceExperienced><ExperienceIntermediate>Y</ExperienceIntermediate><ExperienceNil>N</ExperienceNil></CustomTab></DocumentElement>"  
   }

 ],

    " FinIQResponseTrailer ": {

        "Code": 200,

        "Description": "Success",

        "ResponseAt": "08-Jul-2020 10:37:37 AM"

    }

}

## Response Codes:

### CRR Response Code

These codes will represent the CRR code obtained from the algorithms

|  |  |
| --- | --- |
| Code | Remark |
| R1 | Rating R1, Successful CRR calculation |
| R2 | Rating R2, Successful CRR calculation |
| R3 | Rating R3, Successful CRR calculation |
| R4 | Rating R4, Successful CRR calculation |
| R5 | Rating R5, Successful CRR calculation |
| I1.1 | Inconsistency in matrix 1, section 1 |
| I1.2 | Inconsistency in matrix 1, section 2 |
| I1.3 | Inconsistency in matrix 1, section 3 |
| I1.4 | Inconsistency in matrix 1, section 4 |
| I2.1 | Inconsistency in matrix 2, section 1 |
| I3.1 | Inconsistency in matrix 3, section 1 |
| I4.1 | Inconsistency in matrix 4, section 1 |

### API Response Codes

These codes will indicate if the request was successful. In case of failure, different error codes will show the specific reason for failure.

|  |  |  |
| --- | --- | --- |
| **Response codes** | | |
| Code | Description | Remark |
| 200 | OK | Success |
| 400 | BadRequest | Entity Code null or blank |
| 400 | BadRequest | Entity ID null or blank |
| 400 | BadRequest | External Request ID null or blank |
| 400 | BadRequest | LoginID null or blank |
| 400 | BadRequest | RequestAt null or blank |
| 400 | BadRequest | SourceSystem null or blank |
| 400 | BadRequest | MachineIP null or blank |
| 401 | Unauthorized | No authentication token found |
| 401 | Unauthorized | Invalid Token |
| 401 | Unauthorized | Error in Token verification |
| 403 | Forbidden | Header not found |
| 403 | Forbidden | No Request Body |
| 403 | Forbidden | No Data in Request Body |
| 403 | Forbidden | No content in request |
| 403 | Forbidden | Incomplete Request Body |
| 500 | InternalServerError | Template code found blank please check config |
| 500 | InternalServerError | Error in Notemaster Generation |
| 500 | InternalServerError | No data found in Fetch CRR Result |
| 500 | InternalServerError | CRR calculation result in blank value |
| 500 | InternalServerError | No data returned during Notemaster Generation |
| 500 | InternalServerError | FinIQ Exception |