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## Preface

### Purpose

This document describes the protocol for Web API based communication and messaging between exchanges and Members. The document serves as a common guide for developing and testing interfaces between systems at Exchange and Members.

### Target Audience

- Member can Upload Holding Details of their clients

### Organization of This Document

This document is organized as follows:

| Chapters     | Description                                                                                            |
|--------------|--------------------------------------------------------------------------------------------------------|
| Introduction | Overview of the document covering security features of the API and online messaging guidelines         |
| Exchange API | This chapter gives details of the API's exposed by exchanges. These API's will be consumed by Members. |

## Introduction

API's will be provided as REST endpoints accessible over internet using HTTPS protocol. All messages in the online API's will be in JSON format.

## Authorization

- The API consumer application is expected to send following headers (case-sensitive) in every API HTTP request.
  - **Token:** A unique identifier generated for all successful login.
    - The API provider is not required to provide any header in its response.
    - Token will have expiry of 60 minutes.

JWT mechanism can be used to generate tokens as it is widely used industry standard. (Implemented by NSE)

## Message Format

- Messages will be in JSON.
- Following headers need to be provided in all API calls
  - **Content-Type:** Header value should be "application/json"
- Path parameters and query parameters in the URL's must be encoded using percentage encoding. (Refer [http://www.w3schools.com/tags/ref\\_urlencode.asp](http://www.w3schools.com/tags/ref_urlencode.asp) for details)
- All request and response messages are in JSON (JavaScript Object Notation) format. (Refer <http://www.json.org/> for details).
- Some of the key specifications related to JSON and standards followed for the API's are as follows
  - JSON is built on 2 structures. Object or Map containing key value pairs and an ordered list of values.
  - A value could be Boolean (true/false), number, decimal, String or a structure (List or Object).
  - Object or key value pair structure consists of keys which are strings and values of any of the above types. E.g. {"ClientCode":"Test1", "PanNo":"ABCDE1234F"}
  - List contains list of Clients. E.g. ["Test1", "Test2", "Test3"]
  - A Boolean has only 2 values true or false.
  - String values are enclosed in single quote or double quotes. e.g. "ClientCode", "PanNo"
  - Numbers and decimals are represented without any thousand - separator character. Decimal indicator is dot (".")
  - All dates, times and date times are represented as strings and in Indian standard time. Dates are formatted using format "DD-MM-YYYY". Time are formatted as "hh24:mm:ss". Date times are formatted as "DD-MM-YYYY hh24:mm:ss".
  - Request Payload will be compressed by gzip.

**Endpoints:**

- /login
- /logout
- /tradingHoldingUpload
- /tradingNilUpload

**Login / Logout****POST /LOGIN**

This API validates the user credentials. On successful login, a unique token will be provided per request and session will be established with user's system. In subsequent requests API calls this token should be passed in HTTP header "Authorization" as mentioned in general guidelines.

Note: The password need to be sent in encrypted format using AES256. The encryption private key will be generated on the user registration.

|                 |      |
|-----------------|------|
| <b>Method</b>   | POST |
| <b>Request</b>  | JSON |
| <b>Response</b> | JSON |

**Request JSON values**

| Sr. No. | Field Description | Field Name | Data Type | Description               | Expected Values |
|---------|-------------------|------------|-----------|---------------------------|-----------------|
| 1       | Member Code       | memberCode | Char(10)  | Member Code               |                 |
| 2       | Login Id          | loginId    | Char(16)  | Login id of member's user |                 |
| 3       | Password          | password   | Char(50)  | Password of member's user |                 |

*Member Code, Login Id & Password should be same as used in C2N web portal.*

**Request Object Structure (JSON)**

```
{
  "memberCode": "1234",
  "loginId": "1234",
  "password": "biXhp3Ha1fgxVEp48zHrvVoXMStmxPuAPHo3TVz5lHU="
}
```

***Password in example is encrypted text***

**Response JSON values**

| Sr. No. | Field Description | Field Name | Data Type                                                  | Description                             | Expected Values |
|---------|-------------------|------------|------------------------------------------------------------|-----------------------------------------|-----------------|
| 1       | Member Code       | memberCode | Char(10)                                                   | Member Code                             |                 |
| 2       | Login Id          | loginId    | Char(16)                                                   | Login id of member's user               |                 |
| 3       | Token             | token      | Char(50)                                                   | Unique Token for Session                |                 |
| 4       | Response status   | status     | Char(10)                                                   | Indicating Success / Error              | success/error   |
| 5       | Response code     | code       | Array of strings. Individual element is 3 characters long. | Codes are specified in the below table. |                 |

**Response Object Structure (JSON)**

```
{
  "memberCode": "1234",
  "loginId": "1234",
  "token": "bndfg45ghjg87hjnb",
  "status": "error",
  "code": ["701"]
}
```

**POST /LOGOUT**

This API closes the current session and gets the user logged off.

|                 |      |
|-----------------|------|
| <b>Method</b>   | POST |
| <b>Request</b>  | JSON |
| <b>Response</b> | JSON |

***Request JSON values***

| Sr. No. | Field Description | Field Name | Data Type | Description               | Expected Values |
|---------|-------------------|------------|-----------|---------------------------|-----------------|
| 1       | Member Code       | memberCode | Char(10)  | Member Code               |                 |
| 2       | Login Id          | loginId    | Char(16)  | Login id of member's user |                 |

***Request Object Structure (JSON)***

```
{
  "memberCode": "1234",
  "loginId": "1234"
}
```

***Response JSON values***

| Sr. No. | Field Description | Field Name | Data Type                                                  | Description                             | Expected Values and |
|---------|-------------------|------------|------------------------------------------------------------|-----------------------------------------|---------------------|
| 1       | Response status   | status     | Char(10)                                                   | Indicating Success / Error              |                     |
| 2       | Response code     | code       | Array of strings. Individual element is 3 characters long. | Codes are specified in the below table. |                     |

***Response Object Structure (JSON)***

```
{
  "status": " error",
  "code": [ "802" ]
}
```

## Holding Data

### POST /UPLOAD\_HOLDING

This API will allow member to submit Holding Details of their clients to the Exchange where member can

- Add New Details
- Delete Existing Details

|                 |      |
|-----------------|------|
| <b>Method</b>   | POST |
| <b>Request</b>  | JSON |
| <b>Response</b> | JSON |

### Request JSON values

**NOTE:** holdingData is Array of objects in JSON

| Sr. No. | Field Description          | Field Name  | Data Type  | Size | Description                                                        | Expected Values and Validation                                                     | Type of field                       | Remarks |
|---------|----------------------------|-------------|------------|------|--------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------|---------|
| 1       | Member PAN                 | memberPan   | Characters | 10   | Member PAN                                                         | Basic PAN level Validations                                                        | Header field. Only once per request |         |
| 2       | Last Week Date             | lastWeekDay | Characters | 10   | Last date of the week for which holding details are being uploaded | DD-MM-YYYY                                                                         | Header field. Only once per request |         |
| 3       | Date                       | weekDay     | Characters | 10   |                                                                    | DD-MM-YYYY                                                                         | Header field. Only once per request |         |
| 4       | Version No                 | versionNo   | Number     | 5    | Will be providing the version of API, initial version being 1.0    | 1.0                                                                                | Header field. Only once per request |         |
| 5       | Record Id( Unique Id)      | recId       | character  | 15   | Unique id                                                          | Max length: 15                                                                     | Details repeated for every row      |         |
| 6       | Member's Demat Account No. | dmat        | Characters | 16   | Client Dmat details                                                |                                                                                    | Details. Repeated for every row     |         |
| 7       | Member Account Type        | accountType | Characters | 12   | Client Account Type                                                | POOL, CM COLL, OWN, EPI, CLNTBENEFIT, TM COLL, TM COLL-MTF, CLNT UNPAID, CLNT COLL | Details. Repeated for every row     |         |
| 8       | Unique Client Code (UCC)   | ucc         | Characters | 20   | Unique Client Code                                                 |                                                                                    | Details. Repeated for               |         |

|    |                        |              |            |     |                        |                                   |                                    |  |
|----|------------------------|--------------|------------|-----|------------------------|-----------------------------------|------------------------------------|--|
|    |                        |              |            |     |                        |                                   | every row                          |  |
| 9  | Client Name            | clientName   | Characters | 150 | Client Name            |                                   | Details.<br>Repeated for every row |  |
| 10 | Client PAN             | pan          | Characters | 10  | Client PAN             | Basic PAN level Validations       | Details.<br>Repeated for every row |  |
| 11 | ISIN Code              | isin         | Characters | 12  | ISIN                   |                                   | Details.<br>Repeated for every row |  |
| 12 | Security Type          | securityType | Characters | 4   | Security Type          | EQ, MF, BOND, DEBT, PREF, IDR, WT | Details.<br>Repeated for every row |  |
| 13 | Pledged Balance (Qty.) | totalPldgQty | Number     | 20  | Total Pledged Quantity | CHECK : UPTO 3 Decimals           | Details.<br>Repeated for every row |  |
| 14 | Free Balance (Qty.)    | freeBalQty   | Number     | 20  | Free Balance Quantity  | CHECK : UPTO 3 Decimals           | Details.<br>Repeated for every row |  |
| 15 | Total (Qty.)           | totalQty     | Number     | 20  | Total Quantity         | CHECK : UPTO 3 Decimals           | Details.<br>Repeated for every row |  |
| 16 | Action                 | action       | Characters | 1   |                        | A - Add<br>D – Delete             | Details.<br>Repeated for every row |  |

**Note: Only Add and Delete functionality will be provided.**

**Request Object Structure (JSON)**

```
{
  "memberPan": "ABCDE1234F",
  "lastWeekDay": "07-06-2019",
  "weekDay" : "03-06-2019",
  "versionNo" : 1.0,
  "holdingData": [
    {
      "recId": "111916112102351",
      "dmat": "1200010156568800",
      "accountType": "POOL",
      "ucc": "dummy",
      "clientName": "client name 1",
      "pan": "ABCFD1234G",
      "isin": "INE000AB1000",
      "securityType": "EQ",
      "totalPldgQty": 0,
      "freeBalQty": 10,
      "totalQty": 10,
      "action": "A"
    },
    {
      "recId": "299352523429591",
      "dmat": "1200110156568800",
      "accountType": "EPI",
      "ucc": "dummy1",
      "clientName": "client name 2",
      "pan": "ABCFD7894G",
      "isin": "INE001VN1000",
      "securityType": "BOND",
      "totalPldgQty": 0,
      "freeBalQty": 10,
      "totalQty": 10,
      "action": "D"
    }
  ]
}
```

Note: Details records count is restricted to 5,00,000 records (This will reduce number of request)

The Record ID(Unique Id) field (recId) is generated at the API consumer application. The server will not validate this field for uniqueness or any other criteria. The server will validate only max length of this field.

***The Version Number(versionNo) is used for identifying the request. On future changes in api the version number will be modified accordingly.***

**Response JSON values**

| Sr. No. | Field Description            | Field Name  | Data Type        | Size                                        | Description                                                        | Expected Values and Validation                                                                             | Type of field                         | Remarks |
|---------|------------------------------|-------------|------------------|---------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------|---------|
| 1       | Member PAN                   | memberPan   | Characters       | 10                                          | Member PAN                                                         |                                                                                                            | Header field. Only once per request   |         |
| 2       | Last Week Date               | lastWeekDay | Characters       | 10                                          | Last date of the week for which holding details are being uploaded |                                                                                                            | Header field. Only once per request   |         |
| 3       | Date                         | weekDay     | Characters       | 10                                          |                                                                    |                                                                                                            | Header field. Only once per request   |         |
| 4       | Version No                   | versionNo   | Number           | 5                                           | Will be providing the version of API, initial version being 1.0    | 1.0                                                                                                        | Header field. Only once per request   |         |
| 5       | Record Id( Unique Id)        | recId       | character        | 15                                          | Unique id                                                          | Max length: 15                                                                                             | Details repeated for every row        |         |
| 6       | Success or error status      | status      | Characters       | 10                                          | Status of request acceptance                                       | "success" or "error"                                                                                       | Details repeated for every row        |         |
| 7       | Response code for the record | code        | Array of strings | 3 characters for individual member of array | Response code for the record                                       | Possible response codes are listed in the table below. The value is an array.                              | Details repeated for every row        |         |
| 8       | Header status                | hdrStatus   | Characters       | 10                                          |                                                                    | "success" or "error" or "partial" or "Kindly first submit data for week ended <earliest lastWeekDay Date>" | Header field. Only once per response. |         |
| 9       | Header code                  | hdrCode     | Array of strings | 10                                          |                                                                    | Possible error codes are specified in the table below                                                      | Header field. Only once per response. |         |

|    |                   |       |            |    |  |                                           |                                      |  |
|----|-------------------|-------|------------|----|--|-------------------------------------------|--------------------------------------|--|
| 10 | Acknowledgment ID | ackId | characters | 15 |  | Unique request ID generated by the server | Header field only. Once per response |  |
|----|-------------------|-------|------------|----|--|-------------------------------------------|--------------------------------------|--|

**Response Object Structure (JSON)**

```
{
  "memberPan": "ABCDE1234F",
  "lastWeekDay": "07-06-2019",
  "weekDay": "03-06-2019",
  "versionNo": 1.0,
  "holdingData": [
    {
      "recId": "111916112102351",
      "status": "success",
      "code": ["601"]
    },
    {
      "recId": "299352523429591",
      "status": "error",
      "code": ["902", "909"]
    }
  ],
  "hdrStatus": "partial",
  "hdrCode": ["603"],
  "ackId": "1956403061901"
}
```

The server will generate a unique acknowledgment id (ackId) against each request and send it back in the response.

**POST /UPLOAD\_NIL\_Sub**

This API will allow member to submit NIL submission for Trading Members.

- Add New Details

|                 |      |
|-----------------|------|
| <b>Method</b>   | POST |
| <b>Request</b>  | JSON |
| <b>Response</b> | JSON |

***Request JSON Structure***

| Sr. No. | Field Description        | Field Name  | Data Type  | Size | Description                                                        | Expected Values and Validation | Type of field                       | Remarks |
|---------|--------------------------|-------------|------------|------|--------------------------------------------------------------------|--------------------------------|-------------------------------------|---------|
| 1       | Member PAN               | memberPan   | Characters | 10   |                                                                    | Basic PAN level Validations    | Header field. Only once per request |         |
| 2       | Last Week Date           | lastWeekDay | Characters | 10   | Last date of the week for which holding details are being uploaded | DD-MM-YYYY                     | Header field. Only once per request |         |
| 3       | Date                     | weekDay     | Characters | 10   |                                                                    | DD-MM-YYYY                     | Header field. Only once per request |         |
| 4       | Version No               | versionNo   | Number     | 5    | Will be providing the version of API, initial version being 1.0    | 1.0                            | Header field. Only once per request |         |
| 5       | Record Id( Unique Id)    | recId       | character  | 15   | Unique id                                                          | Max length: 15                 | Details repeated for every row      |         |
| 6       | Unique Client Code (UCC) | ucc         | Characters | 20   |                                                                    |                                |                                     |         |
| 7       | Client PAN               | cpan        | Characters | 10   |                                                                    | Basic PAN level validations    |                                     |         |

**Request Object Structure (JSON)**

```
{
  "memberPan": "ABCDE1234F",
  "lastWeekDay": "07-06-2019",
  "weekDay": "03-06-2019",
  "versionNo": 1.0,

  "holdingData": [
    {
      "recId": "111916112102351",
      "ucc": "1200010156568800",
      "cpan": "ABCDE1234S"
    },
    {
      "recId": "299352523429591",
      "ucc": "1200010156568800",
      "cpan": "VBCDE1234S"
    }
  ]
}
```

**Response JSON Structure**

| Sr. No. | Field Description            | Field Name  | Data Type        | Size                                        | Description                                                        | Expected Values and Validation                                                | Type of field                       | Remarks |
|---------|------------------------------|-------------|------------------|---------------------------------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------|---------|
| 1       | Member PAN                   | memberPan   | Characters       | 10                                          |                                                                    |                                                                               | Header field. Only once per request |         |
| 2       | Last Week Date               | lastWeekDay | Characters       | 10                                          | Last date of the week for which holding details are being uploaded |                                                                               | Header field. Only once per request |         |
| 3       | Date                         | weekDay     | Characters       | 10                                          |                                                                    |                                                                               | Header field. Only once per request |         |
| 4       | Version No                   | versionNo   | Number           | 5                                           | Will be providing the version of API, initial version being 1.0    | 1.0                                                                           | Header field. Only once per request |         |
| 5       | Record Id(Unique Id)         | recId       | character        | 15                                          | Unique id                                                          | Max length: 15                                                                | Details repeated for every row      |         |
| 6       | Success or error status      | status      | Characters       | 10                                          | Status of request acceptance                                       | "success" or "error"                                                          | Details repeated for every row      |         |
| 7       | Response code for the record | code        | Array of strings | 3 characters for individual member of array | Response code for the record                                       | Possible response codes are listed in the table below. The value is an array. | Details repeated for every row      |         |
| 8       | Header status                | hdrStatus   | Characters       | 10                                          |                                                                    | "success" or "error" or "partial" or                                          | Header field. Only once per         |         |

|    |                   |         |                  |    |  |                                                                        |                                       |  |
|----|-------------------|---------|------------------|----|--|------------------------------------------------------------------------|---------------------------------------|--|
|    |                   |         |                  |    |  | " Kindly first submit data for week ended <earliest lastWeekDay Date>" | response.                             |  |
| 9  | Header code       | hdrCode | Array of strings | 10 |  | Possible error codes are specified in the table above                  | Header field. Only once per response. |  |
| 10 | Acknowledgment ID | ackId   | characters       | 15 |  | Unique request ID generated by the server                              | Header field only. Once per response  |  |

**Response Object Structure (JSON)**

```
{
  "memberPan": "ABCDE1234F",
  "lastWeekDay": "07-06-2019",
  "weekDay": "06-03-2019",
  "versionNo" : 1.0,
  "holdingData": [
    {
      "recId": "111916112102351",
      "status": "error",
      "code": ["905", "903"]
    },
    {
      "recId": "299352523429591",
      "status": "success",
      "code": ["601"]
    }
  ],
  "hdrStatus": "partial",
  "hdrCode": ["603"]
  "ackId": "1956403061901"
}
```

Master Code List that will be sent in the response are as following:

| Code | Description                                                                                                                                                                                 |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 601  | Success                                                                                                                                                                                     |
| 602  | General Error                                                                                                                                                                               |
| 603  | Partial Submission                                                                                                                                                                          |
| 604  | Entire holdingData is incorrect                                                                                                                                                             |
| 605  | Something went wrong                                                                                                                                                                        |
| 606  | Method unkown                                                                                                                                                                               |
| 607  | Holding statement module is completely occupied, kindly try after some time.                                                                                                                |
| 608  | Previous request is in progress.                                                                                                                                                            |
| 701  | Invalid member code or login id or password                                                                                                                                                 |
| 702  | User is disabled                                                                                                                                                                            |
| 703  | Invalid member code or login id                                                                                                                                                             |
| 802  | Invalid token                                                                                                                                                                               |
| 803  | Auth token expired                                                                                                                                                                          |
| 804  | "Request exceeds max number of records" when number of records in the request exceed max number of records allowed. Currently, it is 500000.                                                |
| 805  | "Kindly first submit data for week ended <earliest lastWeekDay Date>" for the requests where any previous submission is missing. This message specifies which week's submission is pending. |
| 806  | Member PAN no not proper                                                                                                                                                                    |
| 807  | weekDay Date does not belong to selected holding period                                                                                                                                     |
| 808  | Holding weekDay date format not proper                                                                                                                                                      |
| 809  | lastWeekDay isn't a saturday                                                                                                                                                                |
| 810  | Holding lastWeekDay date format not proper                                                                                                                                                  |
| 901  | Demat account no not proper                                                                                                                                                                 |
| 902  | Invalid member account type                                                                                                                                                                 |
| 903  | Ucc not proper                                                                                                                                                                              |
| 904  | Client name not proper                                                                                                                                                                      |
| 905  | Client pan no not proper                                                                                                                                                                    |
| 906  | ISIN code not proper                                                                                                                                                                        |
| 907  | Invalid security type                                                                                                                                                                       |
| 908  | Pledge Balance not proper                                                                                                                                                                   |

|     |                                                                                                                       |
|-----|-----------------------------------------------------------------------------------------------------------------------|
| 909 | Pledge Balance not proper, Check if this split character is required here should contain max 3 digit after decimal    |
| 910 | Free Balance not proper                                                                                               |
| 911 | Free Balance not proper, Check if this split character is required here should contain max 3 digit after decimal      |
| 912 | Total not proper                                                                                                      |
| 913 | Total not proper, Check if this split character is required here should contain max 3 digit after decimal             |
| 914 | Total should be sum of pledged and free balance                                                                       |
| 915 | Action not proper, Check if this split character is required here First request should not contain any delete records |
| 916 | Action not proper                                                                                                     |
| 917 | Not valid record, blank/NULL values not allowed                                                                       |
| 918 | Duplicate Row                                                                                                         |
| 919 | Invalid request id                                                                                                    |
| 920 | Invalid version No                                                                                                    |
| 921 | Invalid Syntax                                                                                                        |
| 922 | Invalid File Format                                                                                                   |
| 923 | Invalid Endpoints                                                                                                     |
| 924 | Invalid Content Type                                                                                                  |
| 925 | Auth Server down                                                                                                      |
| 926 | HS Server down                                                                                                        |
| 927 | Invalid content encoding type                                                                                         |
| 928 | Account Inactive                                                                                                      |
| 929 | API Registration is not done.                                                                                         |
| 930 | Not Allowed because Holding Period is not yet started.                                                                |
| 931 | Not Allowed to upload data because valid accessible days are expired.                                                 |

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