Protocol for WEB API

CBRICS Application

Version 1.2

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Notice

Revision History

Date	Change Description	Edited By	Version
19-June-18	Draft Version		1.0
29-June-18	New APIs added POST /rest/order/status POST /rest/marketwatch/activeissues POST /rest/participant/find		1.1

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Introduction

This document describes the Web API's to programmatically access and exchange data with CBRICS Platform(HOST system).
The document outlines the messaging protocols and structures for developing such interface.

General Instructions

1. Following headers need to be provided in all API calls
    - **Content-Type**: Header value should be "application/json"
    - **loginKey**: Header value should be the token value received in successful login response (see below). This header is not required in case of login API.
2. Path parameters and query parameters in the URL's must be encoded using percentage encoding. (Refer http://www.w3schools.com/tags/ref_urlencode.asp for details)
3. All request and response messages are in JSON (Javascript Object Notation) format. (Refer http://www.json.org/ for details).
4. Some of the key specifications related to JSON and standards followed for the API's are as follows
    - JSON is built on 2 structures. 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. {"name":"Amit", "age":25}
    - List contains list of values. E.g. ["Amit", "Ajay", "Vikas"]
    - A Boolean has only 2 values true or false.
    - String values are enclosed in single quote or double quotes. e.g. "name", "Amit", "Pending"
    - Numbers and decimals are represented without any thousand - separator character. Decimal indicator is dot (".")
    - All dates, times and datetimes are represented as strings and in Indian standard time. Dates are formatted using format "dd-MMM-yyyy" (E.g. 01-Jan-2018). Time are formatted as "hh24:mm:ss". Date times are formatted as "dd-MMM-yyyy hh24:mm:ss" (E.g. 01-Jan-2016 15:30:00).
5. All URLs for API will be always in lower case.
6. All JSON field names will follow camel-hump style of naming. A field with multiple words would be concatenated without spaces. All characters will be in lower case. First characters of words other than the first word in the field name will be in upper case. For e.g. field for "Order Number" could be represented by field name "orderNumber". Other examples are "firstName", "lastName".

Common Response

All API's can throw errors in the form of a common error response JSON along with HTTP status code. HTTP Status codes are as follows

Status Code	Description
400	Indicates a validation / business logic error
401	Indicates that the login session is not established or has expired. In case 2 sessions are created using same login credentials, then the old session will be expired. Also if a session is inactive for a predefined amount of time then the session will be expired.
404	Resource does not exist
500	Any other application error. Such errors are to be reported to the CBRICS support desk.

Common Error Response JSON

Field	Type	Description
code	Number	Http Status Code. See above
messages	Array of String(100)	List of messages

Sample Response

```
{
      "code":400,
      "messages":["Access Denied"]
}
```

Common API

POST /rest/login

This API authenticates the user and creates a session for the user in the Host System. The session is identified by an alphanumeric login key in the response.

Method	POST
Production URL	https://bricsonline.nseindia.com/bondsnew/rest/login
Test URL	https://bricsonlinereguat.nseindia.com/bondsnew/rest/login
Request	JSON
Response	JSON

Request JSON

Field	Type	Mandatory	Description
domain	String(10)	Y	Participant Code
login	String(10)	Y	Login Id
password	String(20)	Y	Password.
newPassword1	String(20)	N	Optional new password. Should follow “New Password Guidelines”.

Sample Request

```
{
      "domain": "PART1",
      "login": "PART1",
      "password": "a#12G34h"
}
// request with new password
{
      "domain": "PART1",
      "login": "PART1",
      "password": "a#12G34h",
      "newPassword1": "3#Kj1i50"
}
```

Response JSON

Field	Type	Description
ownerCode	String(10)	Participant Code. Value same as in input field “domain”
login	String(10)	Login Id. Same as input
status	String(1)	S = Success F=Failed. Only reason field will be appended in the response P=Password expired. Only reason field will be appended in the response. Invoke the login API again with newPassword1
reason	String(100)	Login fail reason. FAIL Reasons : • Invalid Login Id/Password. • User has been disabled due to incorrect password attempts. • User has been disabled.
loginKey	String(30)	Login Key. This key is to be set in “loginKey” header for all subsequent requests.

firstName	String(50)	User first name
middleName	String(50)	User middle name
lastName	String(50)	User last name
lastLogin	Number	Last login date time (expressed as millis since epoch time i.e. 01-jan-1970)
serverTime	Number	Server time at the time of login. (expressed as millis since epoch time i.e. 01-jan-1970)

Sample Response – Login Success

```
{
        "status":"S",
        "reason":null,
        "loginKey":" 122f2f48a91c94808a93",
        "ownerCode":"PART1",
        "login":"PART1",
        "firstName":"Amit"
        "middleName":null,
        "lastName":null,
        "lastLogin": 1525773311206,
        "serverTime":1461918333567,
}
```

Sample Response – Login Failed

```
{
        "status":"F",
        "reason":"Invalid Login Id/Password"
}
```

Sample Response – Password Expired

```
{
        "status":"P",
        "reason":"Change Password"
}
```

GET /rest/logout

This API closes the current session in the HOST system

Method	GET
Production URL	https://bricsonline.nseindia.com/bondsnew/rest/logout
Test URL	https://bricsonlinereguat.nseindia.com/bondsnew/rest/logout
Request	NONE
Response	JSON

Response JSON

Field	Type	Description
status	String(1)	C = Closed

Sample Response

```
{
        "status": "C"
}
```

POST /rest/order

This API adds a new deal reporting (from seller side) or a buyer standing instruction.

Reporting by Seller has to be confirmed by Buyer. Buyer Standing Instructions are standing instructions by buyer to confirm a deal reporting by seller immediately.

Method	POST
Production URL	https://bricsonline.nseindia.com/bondsnew/rest /order
Test URL	https://bricsonlinereguat.nseindia.com/bondsnew/rest/order
Request	JSON
Response	JSON

Request JSON

Map containing following fields

Field	Type	Mandatory	Description

standingInstFlag	String(1)	No	Indicates if deal is being reported by seller or it is a standing buyer instruction
			Y=Standing Buyer Instruction
			N=Reporting by Seller
			Default value = N

dealType	String(1)	Yes	Deal Type
			D=Direct
			B=Brokered
			I=Inter scheme transfer. Valid only for "Reporting by Seller"

symbol	String(30)	Yes	ISIN of the bond
buyParticipantLoginId	String(30)	Yes	Buy Participant Login Id. In case of "Reporting by Seller" it should be logged in participant id.
sellParticipantLoginId	String(30)	Yes	Sell Participant Login Id. In case of "Standing Buyer Instruction" it should be logged in participant id.
price	Decimal(15,4)	Yes	Price in Rupees. Up to 4 decimal places.
value	Decimal(17,2)	Yes	Value in Rupees. Up to 2 decimal places.
accrInt	Decimal(17,2)	Yes	Interest in Rupees. Up to 2 decimal places.
settle	Number	Yes	Settlement Type 0 = Same Day 1 = T + 1 2 = T + 2
sendFor	String(1)	Yes	Confirmation method. Valid only for "Reporting By Seller" C = Optional Buyer Confirmation (Auto confirmed after a fixed time of reporting) M = Mandatory Buyer Confirmation In case of standing instruction, value in this field will be validated but ignored

yieldType	String(1)	Yes	Yield Type
			P = YTP
			C = YTC

			M = YTM
yield	Decimal(15,4)	Yes	Yield. Up to 4 decimal places.
tradeDate	String(11)	Yes	Trade Date. Can be previous trading date till a particular cutoff time. Else it has to be current date. Format: dd-MMM-yyyy E.g. : 01-Jun-2018
tradeTime	Time	Yes	Time at which trade was concluded. Format : HH:mm E.g. : 14:45
sellerRefNo	String(50)	No	Reference number valid for "Reporting by Seller"
buyerRefNo	String(50)	No	Reference number valid for "Standing Buyer Instruction"

Sample Request

```
{
      "standingInstFlag": "N",
      "dealType": "D",
      "symbol": "INE752E07FF5",
      "buyParticipantLoginId": "BUYER1",
      "sellParticipantLoginId": "SELLER1",
      "price": 100.512,
      "value": 12500000,
      "accrInt": 0,
      "settle": 1,
      "sendFor": "C",
      "yieldType": "P",
      "yield": 10.4512,
      "tradeDate": "28-May-2018",
      "tradeTime": "14:25",
      "sellerRefNo": "TXNREF0001"
}
```

Response JSON

Map containing following fields

Field	Type	Description
standingInstFlag	String(1)	Same as input.
dealType	String(1)	Same as input.
symbol	String(30)	Same as input.
buyParticipantLoginId	String(30)	Same as input.
sellParticipantLoginId	String(30)	Same as input.
price	Decimal(15,4)	Same as input.
value	Decimal(17,2)	Same as input.
accrInt	Decimal(17,2)	Same as input.
settle	Number	Same as input.
sendFor	String(1)	Same as input.
yieldType	String(1)	Same as input.
yield	Decimal(15,4)	Same as input.
tradeDate	String(11)	Same as input.
tradeTime	Time	Same as input.
sellerRefNo	String(50)	Same as input.

buyerRefNo	String(50)	Same as input.
id	Number	Unique Order Number.
message	String(200)	Success message
quantity	Number	Number of Bonds. Value / Facevalue
consideration	Decimal(17,2)	Total Consideration in INR consideration = value * price / 100 + accrInt
buyBackofficeLoginId	String(30)	Buyer Custodian, if any
sellBackofficeLoginId	String(30)	Seller Custodian, if any
status	Number	Following values in case of "Reporting by Seller" 1= Order Entered 2 = Rejected by Buyer 7 = Trade Confirmed (Accepted by Buyer) 8 = Cancelled due to non-acceptance by buyer Following values in case of "Standing Buyer Instruction" 1 = Pending 2 = Confirmed 3 = Cancelled

Sample Success Response

```
{
      "standingInstFlag": "N",
      "dealType": "D",
      "symbol": "INE752E07FF5",
      "buyParticipantLoginId": "BUYER1",
      "sellParticipantLoginId": "SELLER1",
      "price": 100.512,
      "value": 12500000,
      "accrInt": 0,
      "settle": 1,
      "sendFor": "C",
      "yieldType": "P",
      "yield": 10.4512,
      "tradeDate": "28-May-2018",
      "tradeTime": "14:25",
      "sellerRefNo": "TXNREF0001",
      "id":1000001,
      "message":"Sell Deal Reporting saved successfully. Buyer confirmation
is optional.",
      "quantity":10,
      "consideration":12564000,
      "buyBackofficeLoginId":null,
      "sellBackofficeLoginId":null,
      "status":1
}
```

PUT /rest/order

This API updates an existing deal reporting (from seller side) or a buyer standing instruction.

Reporting by Seller can be updated only till the time it is not confirmed by the Buyer. Buyer Standing Instruction can be updated only till the time it is not matched by a similar Reporting by Seller or cancelled.

Method	PUT
Production URL	https://bricsonline.nseindia.com/bondsnew /rest/order

Test URL	https://bricsonlinereguat.nseindia.com/bondsnew/rest/order
Request	JSON
Response	JSON

Request JSON

Map containing all fields in Request JSON of API POST /rest/order. Additionally following field is required

Field	Type	Mandatory	Description
id	Number	Yes	Unique

Sample Request

```
{
      "id": 1000001,
      "standingInstFlag": "N",
      "dealType": "D",
      "symbol": "INE752E07FF5",
      "buyParticipantLoginId": "BUYER1",
      "sellParticipantLoginId": "SELLER1",
      "price": 100.512,
      "value": 12500000,
      "accrInt": 0,
      "settle": 1,
      "sendFor": "C",
      "yieldType": "P",
      "yield": 10.4512,
      "tradeDate": "28-May-2018",
      "tradeTime": "14:25",
      "sellerRefNo": "TXNREF0001"
}
```

Response JSON

Similar to response JSON for POST /rest/order

Sample Success Response

Similar to response JSON for POST /rest/order

POST /rest/order/find

The API returns a list of all orders (Sell order reportings by sellers, for buyers and buyer standing instructions) for the given input filter conditions.

Method	POST
Production URL	https://bricsonline.nseindia.com/bondsnew/rest/order/find
Test URL	https://bricsonlinereguat.nseindia.com/bondsnew/rest/order/find
Request	JSON
Response	JSON

Request JSON

Map Containing following fields

Field	Type	Mandatory	Description

standingInstFlag	String(1)	No	Y=Standing Buyer Instruction
			N=Reporting by Seller

symbol	String(30)	No	ISIN of the bond
buyParticipantLoginId	String(30)	No	Buy Participant Login Id.
sellParticipantLoginId	String(30)	No	Sell Participant Login Id.
id	Number	No	Unique order number
status	Number	No	Following values in case of “Reporting by Seller” 1= Order Entered 2 = Rejected by Buyer 7 = Trade Confirmed (Accepted by Buyer) 8 = Cancelled due to non-acceptance by buyer Following values in case of “Standing Buyer Instruction” 1 = Pending 2 = Confirmed 3 = Cancelled

Sample Request

```
{
	"standingInstFlag":"N",
	"symbol":"INE752E07FF5",
	"buyParticipantLoginId":"BUYER1",
	"sellParticipantLoginId":"SELLER1",
	"id":1000001,
	"status":7
}
```

Response JSON

Contains a list of Map. The Map consists of fields similar to Response Json of API POST /rest/order

Sample Response

```
[
	{
		"standingInstFlag": "N",
		"dealType": "D",
		"symbol": "INE752E07FF5",
		"buyParticipantLoginId": "BUYER1",
		"sellParticipantLoginId": "SELLER1",
		"price": 100.512,
		"value": 12500000,
		"accrInt": 0,
		"settle": 1,
		"sendFor": "C",
		"yieldType": "P",
		"yield": 10.4512,
		"tradeDate": "28-May-2018",
		"tradeTime": "14:25",
		"sellerRefNo": "TXNREF0001",
		"id":1000001,
		"message":"Sell Deal Reporting saved successfully. Buyer 
confirmation is optional.",
		"quantity":10,
		"consideration":12564000,
            "buyBackofficeLoginId":null,
            "sellBackofficeLoginId":null,
            "status":1
      },
      {
            "standingInstFlag": "N",
            "dealType": "D",
            "symbol": "INE752E07FF5",
            "buyParticipantLoginId": "BUYER1",
            "sellParticipantLoginId": "SELLER1",
            "price": 100.512,
            "value": 1250000,
            "accrInt": 0,
            "settle": 2,
            "sendFor": "C",
            "yieldType": "P",
            "yield": 10.4512,
            "tradeDate": "28-May-2018",
            "tradeTime": "14:35",
            "sellerRefNo": "TXNREF0002",
            "id":1000002,
            "message":"Sell Deal Reporting saved successfully. Buyer
confirmation is optional.",
            "quantity":10,
            "consideration":1256400,
            "buyBackofficeLoginId":null,
            "sellBackofficeLoginId":null,
            "status":1
      }
]
```

PUT /rest/order/status

The API updates status of sell order reporting. This API is to be used by buyer to accept or reject sell order reporting by seller.

Method	PUT
Production URL	https://bricsonline.nseindia.com/bondsnew/rest/order/status
Test URL	https://bricsonlinereguat.nseindia.com/bondsnew/rest/order/status
Request	JSON
Response	JSON

Request JSON

Map Containing following fields

Field	Type	Mandatory	Description
id	Number	YES	Unique
status	Number	YES	Contain following values 2 = Rejected by Buyer 7 = Trade Confirmed (Accepted by Buyer)

Sample Request

```
{
      "id": 1000001,
      "status":7
}
```

Response JSON

Map Containing following fields

Field	Type	Description
id	Number	Same as input
status	Number	Same as input.
message	String(200)	Success message

<u>**Sample Response**</u>

```
{
      "id": 1000001,
      "status":7,
      "message": "Sell Deal Reporting approved successfully”
}
// if status is 2
{
      "id": 1000001,
      "status":7,
      "message": "Sell Deal Reporting rejected”
}
```

POST /rest/marketwatch/activeissues

The API gives market-wide summary of trading data for issues that have traded today

Method	POST
Production URL	https://bricsonline.nseindia.com/bondsnew/rest/marketwatch/activeissues
Test URL	https://bricsonlinereguat.nseindia.com/bondsnew/rest/marketwatch/activeissues
Request	JSON
Response	JSON

Response JSON

Map Containing following fields

Field	Type	Description
symbol	String(30)	ISIN of the bond
description	String(200)	Description
type	String(2)	Sec type
issuer	String(100)	Issuer
issueDate	Date	Issue date
maturityDate	Date	Maturity date
couponRate	Decimal(15,4)	Coupon Rate
creditRating	String(100)	Credit Rating
lastTradePrice	Decimal(15,4)	Last trade price
lastTradeValue	Decimal(15,4)	Last Trade Value
lastTradeTime	DateTime	Last Trade Time
totTradeValue	Decimal(15,4)	Total trade value
totNoOfTrades	Number	Total number of trade
avgYield	Decimal(15,4)	Average Yield

avgTradePrice	Decimal(15,4)	Average Trade Price

Sample Response

```
[
      {

            "symbol": "INE752E07FF5",
            "totTradeValue": 3013800.00,
            "description": "POWER GRID CORPORATION OF INDIA LIMITED 9.33 BD
15DC23 FVRS12.5LAC LOA UPTO 11MR09",
            "type": "CC",
            "issuer": "POWER GRID CORPORATION OF INDIA LIMITED",
            "avgYield": 8.1519,
            "avgTradePrice": 101.0034,
            "couponRate": 9.33,
            "lastTradePrice": 101,
            "maturityDate": "15-Dec-2023",
            "totNoOfTrades": 25,
            "issueDate": "15-Dec-2008",
            "lastTradeValue": 125000,
            "lastTradeTime": "15-Jun-2018 12:11:10",
            "creditRating": "CRISIL AAA"
      },
      {

            "symbol": "INE476A16BR4",
            "totTradeValue": 210000000.00,
            "description": "CANARA BANK CD 04JL11",
            "type": "CC",
            "issuer": "CANARA BANK",
            "avgYield": 7.1519,
            "avgTradePrice": 101.0034,
            "couponRate": 9.33,
            "lastTradePrice": 100.5,
            "maturityDate": "04-Jul-2021",
            "totNoOfTrades": 5,
            "issueDate": "02-Feb-2011",
            "lastTradeValue": 50000000,
            "lastTradeTime": "15-Jun-2018 14:11:10",
            "creditRating": "NA"
      }
]
```

POST /rest/participant/find

The API returns a list of all participants and custodians registered in the system for given input filter conditions.

Method	PUT
Production URL	https://bricsonline.nseindia.com/bondsnew /rest/participant/find
Test URL	https://bricsonlinereguat.nseindia.com/bondsnew/rest/participant/find
Request	JSON
Response	JSON

Request JSON

Map representing filter value, containing following fields

Field	Type	Mandatory	Description
loginId	String(30)	No	Unique

filtParticipantType	Number	No	Contain following values 2=Participant 13=Custodian
custodian	String(10)	No	Particpant's Custodian

Sample Request

```
{

      "loginId": "ICICI",
      "filtParticipantType": "Participant",
      "custodian": null
}
```

Response JSON

List of Map with each map representing a Participant/Custodian record. Map containing all fields

Field	Type	Description
loginId	String(30)	Participant Code / Custodian Code
actualStatus	Number	1 = Active 2 = Inactive 3 = Suspended 4 = Unregistered
filtParticipantType	Number	2=Participant 13=Custodian
custodian	String(30)	Participant's Custodian, if any
firstName	String(250)	Participant / Custodian Name

Sample Response

```
[
        {

                "filtParticipantType": 2,
                "firstName": "Participant One",
                "loginId": "PART1",
                "actualStatus": 1
        },
        {

                "filtParticipantType": 2,
                "firstName": "Participant Three",
                "loginId": "PART3",
                "actualStatus": 1
        }
]
```

Guidelines

New Password Policy

The password should adhere to the following rules.

- Password should be minimum 8 characters.
- Password should be maximum 13 characters.

- Password should contain at least one character from each set
  [a-z] [A-Z] [0-9] [~!@#$*()_+-:;]
- New Password should be different from Old Password.
- New Password should not be same as last 5 passwords.
- Password expiries after 90 days.