

# API Specifications

LAMA

Document Version 1.0

API Version V1

10<sup>th</sup> February 2023



National Stock Exchange of India Ltd  
Exchange Plaza, Plot No. C/1, G Block,  
Bandra-Kurla Complex, Bandra (E),  
Mumbai - 400 051.

## LAMA APIs:

The base URL for the LAMA (Log Analytics and Monitoring Application) APIs would be as below

**UAT:** <https://www.lama.uat.nseindia.com/api/{version}>

E.g.: <https://www.lama.uat.nseindia.com/api/V1>

**Note:** The version number in the UAT URL will be the [API Version](#) No specified at the beginning of the document

The LAMA APIs are to be executed at an interval of every 5 mins for 24 hours on all trading days.

Following are the API endpoints:

Sr.no	Method	API EndPoint	Remarks
1	POST	/auth/login	To login: e.g. /auth/login
2	POST	/auth/logout	To logout: e.g. /auth/logout
3	POST	/metrics/application	To publish application metrics: /metrics/application
4	POST	/metrics/hardware	To publish hardware metrics: /metrics/hardware
5	POST	/metrics/database	To publish database metrics: /metrics/database
6	POST	/metrics/network	To publish application network: /metrics/network

### 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 API calls, this token should be passed in HTTP header "Authorization".

For Password:

- The password needs to be sent in a hash string
- The password needs to be sent in encrypted format using AES256. The encryption private key will be generated on user registration
- After 5 invalid attempts with wrong password, the user will not be allowed to generate the token by calling the API.

For Token:

- Login session validity will be for 24 hours.
- After every 24 hours the token will expire, and the approach is that of single token and not refresh token.

Method	API EndPoint	Header	Content-Type
POST	/auth/login		application/json

#### ***Request Object values***

Sr. No.	Field Description	Field Name	Data Type	Description	Optional /Mandatory
1	Member ID	memberId	String	Member Code	<b>M</b>
2	Login ID	loginId	String	Login ID	<b>M</b>
3	Password	password	Char(50)	Password should be encrypted with AES256 encryption using the secret key received during API registration	<b>M</b>

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

```
{
"memberId":"06000",
"loginId":"ApiUser06000",
"password":"0CxUgThnqIK6gaKU2HnL2A=="
}
```

Password in example is encrypted text

#### ***Response JSON values***

Sr. No.	Field Description	Field Name	Data Type	Description
1	Member ID	memberId	String	Member Code
2	Response Code	responseCode	Char(3)	Response Code
3	Login ID	loginId	String	Login ID
4	Token	token	String	Unique Token
5	Status	status	String	Request Status

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

```
{
"memberId":"09100",
"responseCode":"601",
"loginId":"ApiUser09100",
"token":"eyJhbGciOiJSUzI1NiJ9.eyJzdWUiOiIwOTUwMCImlzcyI6IkJwaVVzZXIwOTUwMCImlV4cCI6MTYzZmJlWzYyOCwiaWF0IjoxNjMyMjA0MDI4LjQdGkiOiJhNWl0YjZiZi1lZTQwLTQ4NzltOGM4ZC0xNjE5ZjA2Nzk2NTEifQ.gGmBfplbtP59X6gK28z4l6lIokFgOBOIGjAX-WhjkY5DPJRxHJWtc-TOcDyPjLGAvnHNlvh-SZRRawkxFSNgYw",
"status": "success"
}
```

## Logout

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

Method	API EndPoint	Header	Content-Type
POST	/auth/logout	Session Token	application/json

### Request JSON values

Sr. No.	Field Description	Field Name	Data Type	Description
1	Member ID	memberId	Char(5)	Member Code
2	Login ID	loginId	Char(16)	Login ID

### Request Object Structure (JSON)

```
{
  "memberId": "06000",
  "loginId": "ApiUser06000"
}
```

### Response JSON values

Sr. No.	Field Description	Field Name	Data Type	Description
1	Response Code	responseCode	Char(3)	Response Code
2	Status	status	String	Request Status

### Response Object Structure (JSON)

```
{
  "responseCode": "601",
  "status": "success"
}
```

## Value Table

Field Description	Field Name	Values
Exchange ID	exchangeId	-1=Not Applicable 1= National Stock Exchange 2=Bombay Stock Exchange 3=Metropolitan Stock Exchange 4=Multi-Commodity Exchange 5=National Commodity and Derivatives Exchange
Application ID	applicationId	-1=Not Applicable 1= Client Connectivity 2= Order Management System 3= Risk Management System 4= Exchange Connectivity

### Error Table

Field Description	Field Name	Data type	Description
Application ID	applicationId	Numeric	Application ID for the Record
Error Code	errCode	Numeric	Validation Error Code
Error Key	errKey	String	The incorrect/invalid metric key
Measure	measure	String	The incorrect <a href="#">measure</a> value

### Measure Table

Field Description	Field Name	Data Type
Minimum	min	Numeric
Maximum	max	Numeric
Average	avg	Numeric
Median	med	Numeric

### Application Metrics

This API will publish the different application metrics of the member end systems.

Method	API EndPoint	Header	Content-Type
POST	/metrics/application	Session Token	application/json

### Request Object values

Field Description	Field Name	Data Type	Description	Expected Values & Validations	Optional/ Mandatory
Payload	payload	List	List of application records	List of <a href="#">payload</a>	<b>M</b>
Exchange ID	exchangeId	Numeric	Different exchange ids	Refer <a href="#">Value table</a>	<b>M</b>
Member ID	memberId	String	Member code	09100	<b>M</b>
Sequence ID	sequenceId	Numeric	Sequence number of the records	1	<b>M</b>
Time Stamp (in milliseconds since NSE epoch time i.e., 01-jan-1980)	timestamp	Numeric	Time stamp of the records	1356998400000	<b>M</b>

### ***Payload***

Field Description	Field Name	Data Type	Description	Expected Values & Validations	Optional /Mandatory
Application ID	applicationId	Numeric	Application Identification number	1	<b>M</b>
Metric Data	metricData	List	List of key value pair with all available metrics in key and their corresponding values	[[{"key": "", "value": ""}] Available Keys: 1. log 2. throughput 3. latency 4. failureTradeApi 5. failureAuthentication 6. historicalThroughput 7. historicalLatency	<b>M</b>

### ***Metric Data***

Field Description	Key Name	Data Type	Frequency	Expected Value
Log Monitoring (log messages for log levels Error, Fatal and Warning)	Log	String (2000)	Every 5 min	Timestamp, Server Name, Source Name, Log ID, Log Level, Description
Request/Second - throughput of E2E system	throughput	<a href="#">Object</a>	Every 5 min	Min, Max, Avg & Median values
Response Time (in microseconds) – round trip time of E2E system	latency	<a href="#">Object</a>	Every 5 min	Min, Max, Avg & Median values
Trading API Failure Count	failureTradeApi	Numeric	Every 5 min	Long value
Client Authentication Failure Count	failureAuthentication	Numeric	Every 5 min	Long value
Historical Requests/Second	historicalThroughput	<a href="#">Object</a>	Start of Day	Min, Max, Avg & Median values
Historical Response Time (in microseconds)	historicalLatency	<a href="#">Object</a>	Start of Day	Min, Max, Avg & Median values

```
{
  "memberId": "09100",
  "exchangeId": 1,
  "sequenceId": 1,
  "timestamp": 1356998400000,
  "payload": [
    {
      "applicationId": -1,
      "metricData": [
        {
          "key": "throughput",
          "value": {
```

```

    "min": 0,
    "max": 50,
    "avg": 34,
    "med": 25
  }
},
{
  "key": "latency",
  "value": {
    "min": 0,
    "max": 50,
    "avg": 34,
    "med": 25
  }
},
{
  "key": "historicalThroughput",
  "value": {
    "min": 0,
    "max": 50,
    "avg": 34,
    "med": 25
  }
},
{
  "key": "historicalLatency",
  "value": {
    "min": 0,
    "max": 50,
    "avg": 34,
    "med": 25
  }
}
},
{
  "applicationId": 1,
  "metricData": [
    {
      "key": "failureTradeApi",
      "value": 25
    },
    {
      "key": "failureAuthentication",
      "value": 25
    },
    {
      "key": "log",
      "value": "Timestamp, Server Name, Source Name, Log ID, Log Level, Description"
    }
  ]
}
]
}

```

### Response Object values

Sr. No.	Field Description	Field Name	Data Type	Description	Expected Values & Validations
1	Timestamp	timestamp	Numeric	Timestamp (in milliseconds since NSE epoch time i.e., 01-jan-1980)	1356998400000
2	Version No	versionNo	String	API Version	
3	Response Code	responseCode	Numeric	Application Processing status code	
4	Response Description	reponseDesc	String	Application Processing status description	
5	Errors	errors	List	List of error records in case of partial success Refer <a href="#">Error table</a>	

### In case of Success

```
{
  "timestamp": 1356998400000,
  "versionNo": "V1",
  "responseCode": 601,
  "responseDesc": "Success"
}
```

### In case of Partial Success

```
{
  "timestamp": 1356998400000,
  "versionNo": "V1",
  "responseCode": 602,
  "responseDesc": "Partial Success",
  "errors": [
    {
      "applicationId": 1,
      "errCode": 707,
      "errKey": "abc",
      "measure": null
    },
    {
      "applicationId": 1,
      "errCode": 708,
      "errKey": "latency",
      "measure": "min",
    },
    {
      "applicationId": 2,
      "errCode": 709,
      "errKey": null,
      "measure": null
    }
  ]
}
```



## Hardware Metrics

This API will publish the different hardware metrics of the member end systems.

Method	API EndPoint	Header	Content-Type
POST	/metrics/hardware	Session Token	application/json

### Request Object values

Field Description	Field Name	Data Type	Description	Expected Values & Validations	Optional/ Mandatory
Payload	Payload	List	List of application records	List of <a href="#">payload</a>	<b>M</b>
Exchange ID	exchangeId	Numeric	Different exchange ids	Refer <a href="#">Value table</a>	<b>M</b>
Member ID	memberId	String	Member code	09100	<b>M</b>
Sequence ID	sequenceId	Numeric	Sequence number of the records	1	<b>M</b>
Time Stamp (in milliseconds since NSE epoch time i.e., 01-jan-1980)	timestamp	Numeric	Time stamp of the records	1356998400000	<b>M</b>

### Payload

Field Description	Field Name	Data Type	Description	Expected Values & Validations	Optional/ Mandatory
Application ID	applicationId	Numeric	Application Identification number	1	<b>M</b>
Metric Data	metricData	List	List of key value pair with all available metrics in key and their corresponding values	[{"key": "", "value": ""}] Available Keys: 1. cpu 2. memory 3. disk 4. uptime	<b>M</b>

### Metric Data

Field Description	Key Name	Data Type	Frequency	Expected Value
CPU Utilization (in %)	cpu	<a href="#">Object</a>	Every 5 min	Float (between 0-100, upto 2 decimals)
Memory Utilization (in %)	memory	<a href="#">Object</a>	Every 5 min	Float (between 0-100, upto 2 decimals)
Disk Utilization (in %)	disk	<a href="#">Object</a>	Every 5 min	Float (between 0-100, upto 2 decimals)
Uptime (in minutes)	uptime	<a href="#">Object</a>	Every 5 min	Long value

```

{
  "memberId": "09100",
  "exchangeId": 1,
  "sequenceId": 1,
  "timestamp": 1356998400000,
  "payload": [
    {
      "applicationId": 1,
      "metricData": [
        {
          "key": "cpu",
          "value": {
            "min": 0.10,
            "max": 50.10,
            "avg": 34.55,
            "med": 25.00
          }
        },
        {
          "key": "memory",
          "value": {
            "min": 0.10,
            "max": 50.10,
            "avg": 34.55,
            "med": 25.00
          }
        },
        {
          "key": "disk",
          "value": {
            "min": 0.10,
            "max": 50.10,
            "avg": 34.55,
            "med": 25.00
          }
        },
        {
          "key": "uptime",
          "value": {
            "min": 0,
            "max": 50,
            "avg": 34,
            "med": 25
          }
        }
      ]
    }
  ]
}

```

### Response Object values

Sr. No.	Field Description	Field Name	Data Type	Description	Expected Values & Validations
1	Timestamp	timestamp	Numeric	Timestamp (in milliseconds since NSE epoch time i.e., 01-jan-1980)	1356998400000
2	Version No	versionNo	String	API Version	
3	Response Code	responseCode	Numeric	Application Processing status code	
4	Response Description	reponseDesc	String	Application Processing status description	
5	Errors	errors	List	List of error records in case of partial success Refer <a href="#">Error table</a>	

#### In case of Success

```
{
  "timestamp": 1356998400000,
  "versionNo": "V1",
  "responseCode": 601,
  "responseDesc": "Success"
}
```

#### In case of Partial Success

```
{
  "timestamp": 1356998400000,
  "versionNo": "V1",
  "responseCode": 602,
  "responseDesc": "Partial Success",
  "errors": [
    {
      "applicationId": 1,
      "errCode": 707,
      "errKey": "abc",
      "measure": null
    },
    {
      "applicationId": 1,
      "errCode": 708,
      "errKey": "disk",
      "measure": "min",
    },
    {
      "applicationId": 2,
      "errCode": 709,
      "errKey": null,
      "measure": null
    }
  ]
}
```

## Database Metrics

This API will publish the different hardware metrics of the member end systems.

Method	API EndPoint	Header	Content-Type
POST	/metrics/database	Session Token	application/json

### Request Object values

Field Description	Field Name	Data Type	Description	Expected Values & Validations	Optional/ Mandatory
Payload	payload	List	List of application records	List of <a href="#">payload</a>	M
Exchange ID	exchangeId	Numeric	Different exchange ids	Refer <a href="#">Value table</a>	M
Member ID	memberId	String	Member code	09100	M
Sequence ID	sequenceId	Numeric	Sequence number of the records	1	M
Time Stamp (in milliseconds since NSE epoch time i.e., 01-jan-1980)	timestamp	Numeric	Time stamp of the records	1356998400000	M

### Payload

Field Description	Field Name	Data Type	Description	Expected Values & Validations	Optional/ Mandatory
Application ID	applicationId	Numeric	Application Identification number	1	M
Metric Data	metricData	List	List of key value pair with all available metrics in key and their corresponding values	[{"key": "", "value": ""}] Available Keys: 1. status 2. qSize 3. throughput 4. latency	M

### Metric Data

Field Description	Key Name	Frequency	Data Type	Expected Value
Replication Status (1=Up, 0= Down)	status	Every 5 min	Short	1
Replication Queue Size	qSize	Every 5 min	<a href="#">Object</a>	Long value
Replication Bandwidth Utilization (in %)	bandwidth	Every 5 min	<a href="#">Object</a>	Float (between 0-100, upto 2 decimals)
Replication Latency (in microseconds)	latency	Every 5 min	<a href="#">Object</a>	Long value

```

{
  "memberId": "09100",
  "exchangeId": 1,
  "sequenceId": 1,
  "timestamp": 1356998400000,
  "payload": [
    {
      "applicationId": 1,
      "metricData": [
        {
          "key": "status",
          "value": 1
        },
        {
          "key": "qSize",
          "value": {
            "min": 0,
            "max": 50,
            "avg": 34,
            "med": 25
          }
        },
        {
          "key": " bandwidth",
          "value": {
            "min": 0.1,
            "max": 50.1,
            "avg": 34.55,
            "med": 25
          }
        },
        {
          "key": "latency",
          "value": {
            "min": 0,
            "max": 50,
            "avg": 34,
            "med": 25
          }
        }
      ]
    }
  ]
}

```

### Response Object values

Sr. No.	Field Description	Field Name	Data Type	Description	Expected Values & Validations
1	Timestamp	timestamp	Numeric	Timestamp (in milliseconds since NSE epoch time i.e., 01-jan-1980)	1356998400000
2	Version No	versionNo	String	API Version	
3	Response Code	responseCode	Numeric	Application Processing status code	
4	Response Description	reponseDesc	String	Application Processing status description	
5	Errors	errors	List	List of error records in case of partial success Refer <a href="#">Error table</a>	

#### In case of Success

```
{
  "timestamp": 1356998400000,
  "versionNo": "V1",
  "responseCode": 601,
  "responseDesc": "Success"
}
```

#### In case of Partial Success

```
{
  "timestamp": 1356998400000,
  "versionNo": "V1",
  "responseCode": 602,
  "responseDesc": "Partial Success",
  "errors": [
    {
      "applicationId": 1,
      "errCode": 707,
      "errKey": "abc",
      "measure": null
    },
    {
      "applicationId": 1,
      "errCode": 708,
      "errKey": "latency",
      "measure": "min",
    },
    {
      "applicationId": 2,
      "errCode": 709,
      "errKey": null,
      "measure": null
    }
  ]
}
```

## Network Metrics

This API will publish the different network metrics of the member end systems.

Method	API EndPoint	Header	Content-Type
POST	/metrics/network	Session Token	application/json

### *Request Object values*

Field Description	Field Name	Data Type	Description	Expected Values & Validations	Optional/ Mandatory
Payload	payload	List	List of application records	List of <a href="#">payload</a>	<b>M</b>
Exchange ID	exchangeId	Numeric	Different exchange ids	Refer <a href="#">Value table</a>	<b>M</b>
Member ID	memberId	String	Member code	09100	<b>M</b>
Sequence ID	sequenceId	Numeric	Sequence number of the records	1	<b>M</b>
Time Stamp (in milliseconds since NSE epoch time i.e. 01-jan-1980)	timestamp	Numeric	Time stamp of the records	1356998400000	<b>M</b>

### *Payload*

Field Description	Field Name	Data Type	Description	Expected Values & Validations	Optional/ Mandatory
Application ID	applicationId	Numeric	Application Identification number	1	<b>M</b>
Metric Data	metricData	List	List of key value pair with all available metrics in key and their corresponding values	[{"key": "", "value": ""}] Available Keys: 1. bandwidth 2. latency 3. packetCount 4. lookupCount	<b>M</b>

### *Metric Data*

Field Description	Key Name	Frequency	Data Type	Expected Value
Bandwidth Utilization (in %)	bandwidth	Every 5 min	<a href="#">Object</a>	Float (between 0-100, upto 2 decimals)
Network Latency (in microseconds)	latency	Every 5 min	<a href="#">Object</a>	Long value
Packet Error Count	packetCount	Every 5 min	Numeric	Long value
DNS Lookup Failure Count	lookupCount	Every 5 min	Numeric	Long value

```
{
  "memberId": "09100",
  "exchangeId": 1,
  "sequenceId": 1,
  "timestamp": 1356998400000,
  "payload": [
    {
      "applicationId": 1,
      "metricData": [
        {
          "key": "bandwidth",
          "value": {
            "min": 0.10,
            "max": 50.10,
            "avg": 34.55,
            "med": 25.00
          }
        },
        {
          "key": "latency",
          "value": {
            "min": 0,
            "max": 50,
            "avg": 34,
            "med": 25
          }
        },
        {
          "key": "packetCount",
          "value": 25
        },
        {
          "key": "lookupCount",
          "value": 25
        }
      ]
    }
  ]
}
```



### Response Object values

Sr. No.	Field Description	Field Name	Data Type	Description	Expected Values & Validations
1	Timestamp	timestamp	Numeric	Timestamp (in milliseconds since NSE epoch time i.e. 01-jan-1980)	1356998400000
2	Version No	versionNo	String	API Version	
3	Response Code	responseCode	Numeric	Application Processing status code	
4	Response Description	reponseDesc	String	Application Processing status description	
5	Errors	errors	List	List of error records in case of partial success Refer <a href="#">Error table</a>	

#### In case of Success

```
{
  "timestamp" : 1356998400000,
  "versionNo" : "V1",
  "responseCode" : 601,
  "responseDesc" : "Success"
}
```

#### In case of Partial Success

```
{
  "timestamp": 1356998400000,
  "versionNo": "V1",
  "responseCode": 602,
  "responseDesc": "Partial Success",
  "errors": [
    {
      "applicationId": 1,
      "errCode": 707,
      "errKey": "abc",
      "measure": null
    },
    {
      "applicationId": 1,
      "errCode": 708,
      "errKey": "latency",
      "measure": "min",
    },
    {
      "applicationId": 2,
      "errCode": 709,
      "errKey": null,
      "measure": null
    }
  ]
}
```

## Response Codes

### Status Codes

Codes	Description
200	Successful response body.
400	Bad request
401	Unauthorised Token
403	Forbidden if the user does not have permission.
405	Method not found
500	Internal Server Error

## Validation Error Codes and Description

Validations Error Codes	Validation Messages	Description
601	Success	When the API is a Success
02	Partial Success	When partial records in an API are successful
605	Something went wrong	It's a technical error
606	Method unknown	Invalid HTTP (POST,GET) method
607	Concurrent User limit exceeded	Multiple API requests triggered together, and the API call limit exceeded
701	Invalid member code or login id or password	For Log In API
702	User is disabled	User is disabled
703	Invalid member code or login id	For Log Out API
704	Invalid Sequence ID	The sequence id entered is invalid or is duplicate
705	Invalid timestamp	If the data to be pushed by members is before an interval of 5 mins from the last time when the data was pushed
706	Invalid request	Request made for any API is invalid
707	Invalid Metric Key	Invalid metric key in Payload
708	Invalid Metric Value	Invalid metric value in Payload
709	Duplicate record	Duplicate records for an Application ID
710	Payload size exceeded	Payload has more than 50 records
801	Invalid token	For all APIs
802	Authentication token expired	For all APIs
901	Not valid record	Blank or null values not allowed
902	Invalid version no	For all APIs
903	Invalid syntax	Internal error
904	Invalid URL	URL name is incorrect
905	Invalid content type	Invalid request body data type
906	Authentication server down	Authentication server down
907	Password attempt Limit Exceeded	Multiple attempts made with incorrect password
908	API call not allowed	User not allowed to access the API

## Version History

Version History		
Version	Release date	Change Description
1.0	10/02/2023	Base version