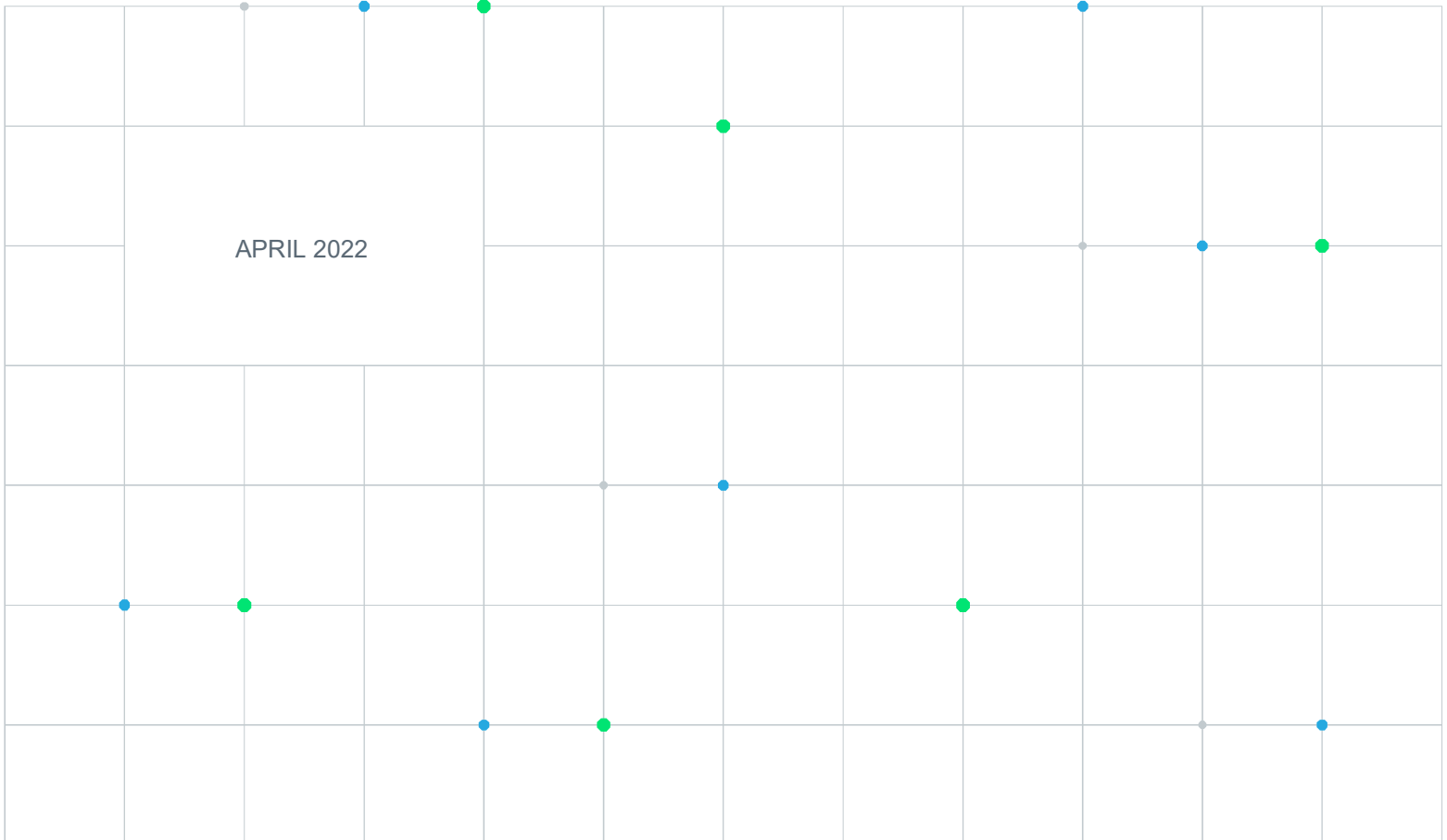


# BAMS Clearing Firm API

RESTful APIs for performing transactions related to collaterals with the CME Group.

Version 1.1



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# 1. Getting Started

A collection of REST (REpresentational State Transfer) APIs for managing transactions involving collaterals with the CME Group. Clearing Member Firms (CMF) can make use of these APIs to submit Deposit or Withdrawal transaction requests for a certain set of asset types, get the details of the one or more transactions, check the collateral balance of different asset accounts and more. Open Authentication, OAuth 2.0, is used for authenticating API requests

## 2. API Details

This section describes functionality of each API in detail.

### 2.1. Search Collateral Transaction

There are three APIs for searching collateral transactions which are submitted either directly by the clearing member firm or by the clearing house team on behalf of the member firm.

#### 2.1.1. Search using transaction correlation ID

Perform collateral transaction search by passing unique key associated with every transaction. Search key is provided in the API endpoint as path variable. Result includes details of a transaction matching the key.

#### API Request

Request	
<b>HTTP Method</b>	GET
<b>API Endpoint - NR</b>	<a href="https://collateral-management-firm-api-nr.cmegroup.com/collateraltransactions/{transactionCorrelationId}">https://collateral-management-firm-api-nr.cmegroup.com/collateraltransactions/{transactionCorrelationId}</a>
<b>API Endpoint - PROD</b>	<a href="https://collateral-management-firm-api.cmegroup.com/collateraltransactions/{transactionCorrelationId}">https://collateral-management-firm-api.cmegroup.com/collateraltransactions/{transactionCorrelationId}</a>
<b>Input</b>	transactionCorrelationId - ID that uniquely represents a collateral transaction required - true type - String in - path
Response	
<b>Success</b>	Http Method Code - 200 Type - CollateralTransactionResponseMessage
<b>Failure</b>	Http Method Code - 400 Type - ErrorResponseMessage Description - Invalid transaction correlation id  Http Method Code - 401 Type - ErrorResponseMessage Description - Entitlement missing

### 2.1.2. Search using batch correlation ID

Perform collateral transaction search by passing batch correlation ID shared by all the transactions submitted in a batch request. Search key is provided in the API endpoint as path variable. Result includes details of all the transactions matching the batch ID.

Request	
<b>HTTP Method</b>	GET
<b>API Endpoint</b>	<a href="https://collateral-management-firm-api-nr.cmegroup.com/collateraltransactions/{messageGuid}">https://collateral-management-firm-api-nr.cmegroup.com/collateraltransactions/{messageGuid}</a>
<b>API Endpoint - PROD</b>	<a href="https://collateral-management-firm-api.cmegroup.com/collateraltransactions/{messageGuid}">https://collateral-management-firm-api.cmegroup.com/collateraltransactions/{messageGuid}</a>
<b>Input</b>	messageGuid - ID that is shared by all the transactions submitted as single request required - true type - String in - path
Response	
<b>Success</b>	Http Method Code - 200 Type - CollateralTransactionResponseMessage
<b>Failure</b>	Http Method Code - 400 Type - ErrorResponseMessage Description - Invalid batch id
	Http Method Code - 401 Type - ErrorResponseMessage Description - Entitlement missing

### 2.1.3. Search using filters

Perform collateral transaction search using one or more filter criteria such as transaction date, asset account id, fund segregation type etc... clearingFirmId along with at least one additional filter criterion are mandatory inputs for this API. This means at least two search criteria are mandatory input values one which must be clearingFirmId. Search filters are to be passed as query parameters. The below table lists all the possible inputs along with acceptable list of values wherever applicable

Request	
<b>HTTP Method</b>	GET
<b>API Endpoint</b>	<a href="https://collateral-management-firm-api-nr.cmegroup.com/collateral-transactions/search">https://collateral-management-firm-api-nr.cmegroup.com/collateral-transactions/search</a>
<b>API Endpoint – PROD</b>	<a href="https://collateral-management-firm-api.cmegroup.com/collateral-transactions/search">https://collateral-management-firm-api.cmegroup.com/collateral-transactions/search</a>
<b>Input</b>	<p>clearingFirmId- Member firm ID. Mandatory value required - true type - String in – query</p> <p>clearingOrganizationId – Clearing Organization ID required - false type - String in – query</p> <p>collateralAccountId – Asset account identifier required - false type - String in - query</p> <p>messageGuid – identifier shared by all the transactions in a single request(batchId) required - false type - String in - query</p> <p>collateralTransactionGuid – unique identifier of a transaction(correlationId) required - false type - String in - query</p>

customerCollateralTransactionId - Clearing Organization ID

required - false

type - String

in - query

transactionDt - Transaction Date in the format yyyy-MM-dd

required - false

type - String

in - query

businessFunctionType - Business Function Type

required - false

type - BusinessFunctionType

in - query

Possible values -

- CLR
- XMOCC
- MBR
- MOSSX
- SECR

collateralAccountType - Collateral Account Type

required - false

type - CollateralAccountType

in - query

Possible values -

- DLVRY
- MBR
- PB
- SECR

fundSegregationType - Fund Segregation Type

required - false

type - FundSegregationType

in - query

Possible values -

- CSEG
- CNSEG
- COTC
- NSEG
- SECURED

Response	
<b>Success</b>	Http Method Code - 200 Type - CollateralTransactionResponseMessage
	Http Method Code - 400 Type - ErrorResponseMessage Description – CMF ID, mandatory input, missing
<b>Failure</b>	Http Method Code - 401 Type - ErrorResponseMessage Description - Entitlement missing
	Http Method Code - 401 Type - ErrorResponseMessage Description – Additional search filter(s) missing

## 2.2. Search Collateral Balance

Perform collateral balance enquiry of an asset account belonging to a member firm. API takes asset account details such as accountId, fund segregation type and so on as input and returns the current balance of the all the asset types deposited against this account. Cash balance is segregated according to currency, security balance is segregated using instrument id. It includes details such as PAR amount, performance bond value, instrument id, warrant id (for metal warrant) and more.

Request	
<b>HTTP Method</b>	GET
<b>API Endpoint</b>	<a href="https://collateral-management-firm-api-nr.cmegroup.com/collateral-balance/search">https://collateral-management-firm-api-nr.cmegroup.com/collateral-balance/search</a>
<b>API Endpoint – PROD</b>	<a href="https://collateral-management-firm-api.cmegroup.com/collateral-balance/search">https://collateral-management-firm-api.cmegroup.com/collateral-balance/search</a>
<b>Input</b>	clearingFirmId- Member firm ID. Mandatory value required - true type - String in – query  clearingOrganizationId – Clearing Organization ID required - true type - String in - query  collateralAccountId – Asset account identifier required - true type - String in – query



businessFunctionType - Business Function Type

required - true

type - BusinessFunctionType

in - query

Possible values -

- CLR
- XMOCC
- MBR
- MOSSX
- SECR

collateralAccountType- Collateral Account Type

required - true

type - CollateralAccountType

in - query

Possible values -

- DLVRY
- MBR
- PB
- SECR

fundSegregationType- Fund Segregation Type

required - true

type - FundSegregationType

in - query

Possible values -

- CSEG
- CNSEG
- COTC
- NSEG
- SECURED

### Response

**Success**

Http Method Code - 200

Type - CollateralTransactionResponseMessage

**Failure**

Http Method Code - 400

Type - ErrorResponseMessage

Description - Invalid input

Http Method Code - 401

Type - ErrorResponseMessage

Description - Entitlement missing

### 2.3. Submit Collateral Transaction

Submit collateral deposit or withdrawal transactions for CME acceptable collateral. Currently Cash, Security and Gold Metal Warrant (GCW) asset types are supported through the API. Multiple transactions can be submitted per request. Combination of different asset types, different asset accounts and different transaction types are allowed per request. API client should have read-write entitlements to submit the transaction. If entitlement is missing, request is rejected.

Transaction submit request has a field ProcessingMode which determines how the request is handled in case of errors. Possible values for this fields are PARTIAL and COMPLETE. In case the value is PARTIAL, individual transactions in the request that have one or more errors are rejected and remaining transactions are processed. In case the value is COMPLETE, the entire request is rejected if one transaction causes an error.

When a new request is received, all the transactions in it are run through a set of validations and checks. After this step response is sent to the API client before forwarding the transactions for further processing. The response contains batch ID and correlation ID for each transaction which can be used to enquire the transaction details. How much time is needed to completely process a transaction depends on the factors such as time at which the transaction is submitted, asset type, currency and etc...

If a request contains at least one GCW transaction then response is sent back even before running the validations and checks. API response contains just the batch id and not individual transaction ids. Below table shows sample request for each of the asset types.

PAR amount limit per transaction is as follows:

USD Currency (Cash and Security) -- 1,000,000,000.00 (One Billion)

CAD Currency (Cash and Security) -- 1,000,000,000.00 (One Billion)

Rest All Asset Types and Currency Combinations – 9,999,999,999.99 (Nine Billion Nine Hundred Ninety-nine Million Nine Hundred Ninety-nine Thousand Nine Hundred Ninety-nine and Ninety-nine Cents)

GCW – 500.000

Transaction splitting – USD, CAD and JPY security transaction is split into multiple transactions if the PAR amount in the original transaction is greater than the MAX par allowed per transaction. Below table summarises the transaction splitting logic.

Transaction Type	Asset Type	Currency	Max PAR / txn	Max Allowed PAR / txn	Wire Generation
DP or WD	Security	USD	50 Million	1 Billion	Yes
DP or WD	Security	CAD	50 Million	1 Billion	Yes
DP or WD	Security	JPY	5 Billion	Nine Billion Nine Hundred Ninety-nine Million Nine Hundred Ninety-nine Thousand Nine Hundred Ninety-nine and Ninety-nine Cents	Yes

The below table lists the mandatory input values in the instrument section of the API request as applicable to different asset types –

Asset Type	Collateral Type	Currency	CUSIP	ISIN	Warrant ID	Custodian
CASH	Yes(CASH)	Yes				Yes
US SECURITIES			Yes			Yes
FX SECURITIES				Yes		Yes
STOCK			Yes			Yes
CORP			Yes			Yes
ETF			Yes			Yes
METAL WARRANT	Yes(GCW)	Yes (USD)			Yes	Yes(Facility ID)

Request	
HTTP Method	POST
API Endpoint	<a href="https://collateral-management-firm-api-nr.cmegroup.com/collateral-transactions">https://collateral-management-firm-api-nr.cmegroup.com/collateral-transactions</a>
API Endpoint – PROD	<a href="https://collateral-management-firm-api.cmegroup.com/collateral-transactions">https://collateral-management-firm-api.cmegroup.com/collateral-transactions</a>
Input	<p>Sample Request for Cash Transaction:</p> <pre>{   "messageGuid": null,   "payload": [     {       "collateralRequestStatus": "NEW",       "status": "NEW",       "transactionDt": "2021-08-24",       "parAmt": 10010.00,       "transactionType": "DEPOSIT",       "entities": {         "businessFunctionType": "CLR",         "clearingFirmId": "999",         "clearingOrganizationId": "CME",         "collateralAccountId": "999",         "collateralAccountType": "PB",         "fundSegregationType": "CSEG"       }     }   ],   "instrument": {     "collateralType": "CASH",</pre>

```
    "ccy": "USD",
    "cusip": null,
    "isin": null,
    "warrantId": null,
    "custodianId": " CIHCVU2L"
  }
},
"processingMode": "PARTIAL"
}
```

#### Sample Request for Security Transaction:

```
{
  "messageGuid": null,
  "payload": [
    {
      "collateralRequestStatus": "NEW",
      "status": "NEW",
      "transactionDt": "2021-08-24",
      "parAmt": 10010.00,
      "transactionType": "DEPOSIT",
      "entities": {
        "businessFunctionType": "CLR",
        "clearingFirmId": "999",
        "clearingOrganizationId": "CME",
        "collateralAccountId": "999",
        "collateralAccountType": "PB",
        "fundSegregationType": "CSEG"
      },
      "instrument": {
        "collateralType": null,
        "ccy": null,
        "cusip": "1234578963",
        "isin": null,
        "warrantId": null,
        "symbol": null,
        "custodianId": " CIHCVU2L"
      }
    }
  ],
  "processingMode": "PARTIAL"
}
```

#### Sample GCW Record:

```
{
```

```

"messageGuid": "0f79398d-bd67-5760-99ny-8ech475123k38",
"payload": [
{
  "collateralRequestStatus": "NEW",
  "status": "NEW",
  "transactionDt": "2021-08-24",
  "parAmt": 123.11,
  "transactionType": "WITHDRAWAL",
  "entities": {
    "businessFunctionType": "CLR",
    "clearingFirmId": "999",
    "clearingOrganizationId": "CME",
    "collateralAccountId": "999",
    "collateralAccountType": "PB",
    "fundSegregationType": "NSEG",
    "customerAccountId": "1428698"
  },
  "instrument": {
    "collateralType": "GCW",
    "ccy": "USD",
    "cusip": null,
    "isin": null,
    "warrantId": "1245863",
    "symbol": null,
    "custodianId": "9999"
  }
}
],
"processingMode": "PARTIAL"
}

```

**Response**

<b>Success</b>	Http Method Code - 200 Type - CollateralTransactionResponseMessage
<b>Failure</b>	Http Method Code - 400 Type - ErrorResponseMessage Description – Invalid data ( ProcessingMode is null); One or more transaction has invalid value when processing mode is COMPLETE.  Http Method Code - 401 Type - ErrorResponseMessage Description - Entitlement missing

## 2.4. Update Collateral Transaction

Perform update on the collateral deposit or withdrawal transactions. The current version of the API supports just one update to the transaction viz. to cancel it. Transaction cancellation depends on its current state. Completed, Rejected, Validation Failed or Errored transactions cannot be cancelled. Transaction can be cancelled provided it is currently in one of the following states –

- Pending
- Pending Cutoff

API permits only one transaction cancellation per request. Providing batch id in the path variable to cancel multiple transactions at the same time results in an error. API client should have read-write entitlements to submit the transaction in the absence of which the request is not processed.

Request	
<b>HTTP Method</b>	PUT
<b>API Endpoint</b>	<a href="https://collateral-management-firm-api-nr.cmegroup.com/collateraltransactions/{collateralTransactionGuid}">https://collateral-management-firm-api-nr.cmegroup.com/collateraltransactions/{collateralTransactionGuid}</a>
<b>API Endpoint – PROD</b>	<a href="https://collateral-management-firm-api.cmegroup.com/collateraltransactions/{collateralTransactionGuid}">https://collateral-management-firm-api.cmegroup.com/collateraltransactions/{collateralTransactionGuid}</a>
<b>Input</b>	collateralTransactionGuid – transaction correlation id that is unique for each transaction required - true type - String in - path
<b>Request Body</b>	<p>Sample Request for Security Transaction:</p> <pre>{   "messageGuid": "1eeaf8db-7a26-441b-b1c6-da65b123a1bf",   "payload": [     {       "collateralTransactionGuid": "9eddb9ae-134a-46f8-a22d-2f6e037df005",       "customerCollateralTransactionId": "78f552ee-8aac-403a-90b5-d7b97fa4219a",       "entities": {         "businessFunctionType": "CLR",         "clearingFirmId": "999",         "clearingOrganizationId": "CME",         "collateralAccountId": "999",         "collateralAccountType": "PB",         "fundSegregationType": "CSEG", </pre>

```

    "settlementInstructionId": null
  },
  "instrument": {
    "collateralType": "CASH",
    "ccy": "EUR",
    "cusip": null,
    "custodianId": "CIHCVU2L",
    "expirationDt": null,
    "isin": null,
    "symbol": null,
    "warrantId": null
  },
  "marketValueAmt": null,
  "parAmt": 2000.45,
  "performanceBondValue": null,
  "status": "PENDING_CUTOFF",
  "transactionDt": "2021-09-17",
  "transactionType": "DEPOSIT",
  "valueDt": "2021-09-20"
}
],
"processingMode": "COMPLETE"
}

```

### Response

<b>Success</b>	Http Method Code - 200
	Type – CollateralTransactionResponseMessage
	Description – Transaction cancelled successfully
<b>Failure</b>	Http Method Code - 400
	Type - ErrorResponseMessage
	Description - Invalid transaction correlation id
	Http Method Code - 400
	Type - ErrorResponseMessage
	Description – Transaction is cancelled/rejected/errored already
	Http Method Code - 400
	Type - ErrorResponseMessage
Description – Not cash/security/gcw transaction	
<b>Failure</b>	Http Method Code - 400
	Type - ErrorResponseMessage
	Description – Transaction cancellation failed (it could be in an intermediary state in which cancellation is not allowed)
<b>Failure</b>	Http Method Code - 401
	Type - ErrorResponseMessage
	Description - Entitlement missing

### 3. User Roles

API access and action are controlled by the user role and member firm ID entitled to API user. The following tables lists the roles defined by the application and APIs accessible for those roles.

User Roles	Accessible APIs	Comments
<b>External Firm API Access Read-Only</b>	Search Collateral Balance Search Collateral Transaction ( all the three flavours)	Perform read operation to get details related to firms entitled to the user(API_ID)
<b>External Firm API Access Read-Write</b>	Search Collateral Balance Search Collateral Transaction ( all the three flavours) Submit Collateral Transaction Update Collateral Transaction	Along with read operation, perform write (submission and update) operations on the firms entitled to the user (API_ID)



## 4. Token Generation

OAuth 2.0 is used for authenticating API requests. OAuth is an open protocol that supports secure authorization in a simple, standard method and decouples authentication from authorization. CME group makes available OAuth endpoint for generating access tokens. These endpoints are used by client applications and Resource Servers to communicate with the PingFederate OAuth Authorization Server to issue and validate access and refresh tokens. This authorization token should be included in the request header with “Bearer” as header prefix.

Detail	End Point	NR	PROD
<b>OAuth Token Endpoint</b>	/as/token.oauth2	<a href="https://authnr.cmegroup.com/as/token.oauth2">https://authnr.cmegroup.com/as/token.oauth2</a>	<a href="https://auth.cmegroup.com/as/token.oauth2">https://auth.cmegroup.com/as/token.oauth2</a>
<b>OAuth Token Revocation Endpoint</b>	/as/revoke_token.oauth2	<a href="https://authnr.cmegroup.com/as/revoke_token.oauth2">https://authnr.cmegroup.com/as/revoke_token.oauth2</a>	<a href="https://auth.cmegroup.com/as/revoke_token.oauth2">https://auth.cmegroup.com/as/revoke_token.oauth2</a>
<b>OpenID Connect Metadata Endpoint</b>	/.well-known/openid-configuration	<a href="https://authnr.cmegroup.com/.well-known/openid-configuration">https://authnr.cmegroup.com/.well-known/openid-configuration</a>	<a href="https://auth.cmegroup.com/.well-known/openid-configuration">https://auth.cmegroup.com/.well-known/openid-configuration</a>

Member firms who choose to access BAMS Clearing Firm APIs using OAuth protocol for authorization can follow the adoption path outlined below.

Creating new OAuth API ID --

1. Log into [CME Customer Center](#).
2. Follow the steps to [Create an API ID](#). For the "Type," select OAuth.

Please note OAuth API IDs are case sensitive.

Converting Basic Auth ID to OAuth API ID –

1. Log into [CME Customer Center](#).
2. Follow the steps in [Managing API IDs](#) to convert the authentication type. For the "Type," select OAuth.

Please note that once the Basic Auth ID is converted to OAuth API ID it cannot be used to access basic auth service.

Request	
<b>HTTP Method</b>	POST
<b>API Endpoint - NR</b>	<a href="https://authnr.cmegroup.com/as/token.oauth2">https://authnr.cmegroup.com/as/token.oauth2</a>
<b>API Endpoint - PROD</b>	<a href="https://auth.cmegroup.com/as/token.oauth2">https://auth.cmegroup.com/as/token.oauth2</a>
<b>Input</b>	grant_type required - true type - String in - query value - client_credentials
Response	
<b>Success</b>	<pre> Http Method Code - 200 {   "access_token": " eyJhbGciOiJSUzI1NiIsImtpZCI6IjBZLXpkZW85cXNrczBwRlI4UjdkSWkyTjhDTSlzInBpLmF0b Sl6ljEifQ.eyJzY29wZSI6W10slmNsaWVudF9pZCI6IkFQSV9GSU5fT0FVVEhfUkVBRF9OUiIsImF 1ZCI6Ik5yIiwianRpIjojOGthYWJRR1FpZ1VYcW12cyIsbnN1YiI6IkFQSV9GSU5fT0FVVEhfUkV RF9OUiIsImV4cCI6MTYzMjgzNjUwMn0.U4It5mnnyz47XNUeFyKwu4Lo3g0RMMUU9YGEsP_Agn_NZ e-oeK9o9PJ195aQqeYnVWPWF7-8P_-QRM3TDIG_zMaJW66t3urxzGNpJsC8CDxgAILSt48Xn79k PvLapaSbPb7aNG0vUVfJyfdmZ2kPI7bDErQ7NAwBN4kDljk5nITIUE0KuFRXnev6HI0igFWemR2nC kyehZFjkvpTt10UWqkwbmHYkjhDMPV8rTZMxgYtALJe1ZaXAr2IRHqOxs8E-gc7ezWa5YbNuzOV6VN JS0rgrBzPHz0Azj0yqsGpOMIXwcEzHsP6MjBtPcqMJnopWTN3BeOs8_tC0fAjbUc",   "token_type": "Bearer",   "expires_in": 1799 } </pre>
<b>Failure</b>	<pre> Http Method Code - 401 {   "error_description": "Invalid client or client credentials.",   "error": "invalid_client" } </pre>

Please contact [EASE.AtYourService@cmegroup.com](mailto:EASE.AtYourService@cmegroup.com) for access related queries.



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