

FACTSET › SEE THE ADVANTAGE

PUBLISHER API - VERSION 1.0 (BETA)
Developer's Manual and Reference
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Publisher API – Version 1.0

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1. Motivation

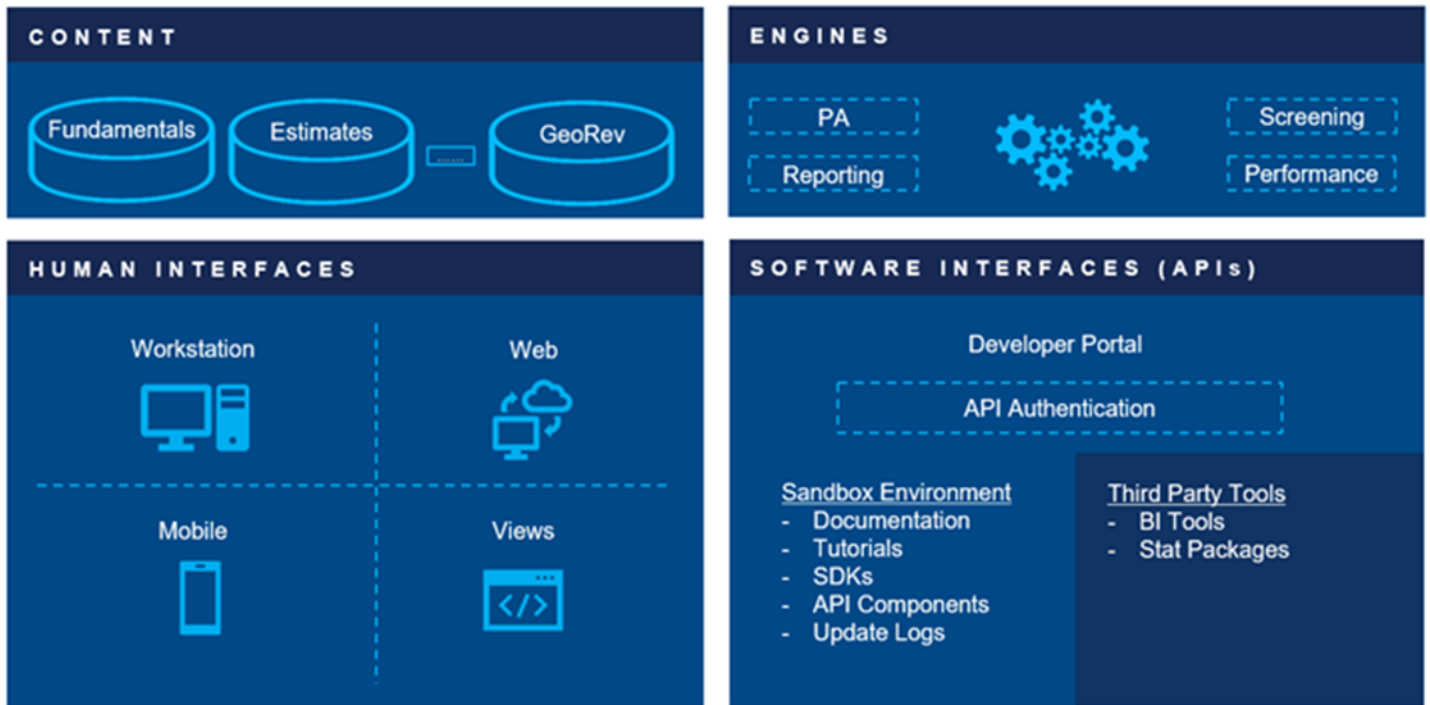
In 1997, FactSet launched Portfolio Analysis 1.0, which set the foundation for Analytics. Soon after, Portfolio Analysis 2.0 integrated risk analytics from third-party vendors, and then expanded to include Fixed Income in 2004. FactSet now offers a robust suite of multi-asset portfolio analytics products that leads the market in flexibility, analytics, and breadth. Today, clients rely on FactSet for interactive analytics through various products, such as Portfolio Analysis (PA), SPAR, Alpha Testing, Optimizers, and Portfolio Dashboard, as well as the distribution of analytics through Portfolio Batcher, Publisher Flat Files, and Publisher documents.

2. API Program

2.1 Overview

Clients have been moving towards building a custom solution, driven by the need to increase productivity by consolidating information into a single user experience. By exposing analytics, performance, and risk through APIs, it provides you with a sophisticated channel to interact with FactSet’s leading multi-asset analytics. As the market continues to demand more transparency and data, FactSet will provide flexible options to meet those demands. APIs complement the current analytics

suite offerings and facilitate partnerships by allowing you to build private experiences, integrate with third-party BI tools like Tableau, third-party stat packages like RStudio, and increase control over internal consumption of analytics from FactSet.



The first stage of exposing Analytics APIs will focus on the portfolio analytics engine. Later, the program will expand to include other analytics engines, products, and APIs from other business units.

The program will provide the following:

- Developer toolkit to build proof of concept
- Uniform feel across all FactSet’s Enterprise scale APIs
- Adherence to industry standards
- Versioned APIs
- Extensive documentation and tutorials on the developer portal

3. Publisher API

Through the Publisher API, you can optimize your reporting workflows by calculating customized, presentation-ready documents that integrate Portfolio Analysis, SPAR, commentary, risk, as well as your firm's proprietary data. Publisher reports are delivered as PDF files styled with your company's logo and color palette.

All APIs are hosted under <https://api.factset.com>. Authentication is handled using API Keys and authorization is handled using FactSet’s in-house subscriptions product. You can find more information about using API Keys at <https://developer.factset.com/authentication>.

HTTP request and response header names should be considered case insensitive as per [HTTP Standard](#). Please do not rely on case sensitive matching of headers in your code.

3.1 Multiple Calculation APIs

3.1.1 Run Multiple Calculations

POST /analytics/engines/v2/calculations

Description

This endpoint runs multiple calculations on Publisher Engine based on parameters specified in the POST body. It must be used first, before checking status or cancelling endpoints. A successful response will contain the URL to check the status of the request.

Request Headers

| Header name | Description |
|----------------------|--|
| Authorization | Standard HTTP header. Value needs to use ‘Basic <base64 encoded value>’ format. |
| Content-Type | Standard HTTP header. Value needs to specify application/JSON (i.e., caller needs to specify that the body is in JSON format). |

Request Body

The request body accepts a collection of calculation parameters. The parameters are outlined below:

| Parameter name | Data type | Required | Description | Format |
|-----------------|-----------|----------|---|--|
| document | String | Yes | Publisher document to analyze. | Document can be fetched using the Document Lookup . |
| account | Object | Yes | User’s FactSet account path OR benchmark. | Account identifier must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for the account. Possible values for holdings mode are B&H (Buy and Hold), TBR (Transaction based returns) or OMS. Default holdings mode value is B&H. |
| dates | Object | Yes | Date range to run against. Object takes just enddate for document that needs as of date, otherwise it takes both startdate and enddate. | Supported Date Formats . |

Response Headers

| Header name | Description |
|-----------------------------------|--|
| X-DataDirect-Request-Key | FactSet's request key header. |
| X-FactSet-API-Request-Key | Key to uniquely identify an Analytics API request. Only available after successful authentication. |
| X-FactSet-API-Units-Limit | Maximum units limit across all requests. |
| X-FactSet-API-Units-Remaining | Number of units remaining till unit limit reached. |
| Location | Standard HTTP header. Contains URL to check status of the request. |
| X-FactSet-API-RateLimit-Limit | Number of allowed requests for the time window. |
| X-FactSet-API-RateLimit-Remaining | Number of requests left for the time window. |
| X-FactSet-API-RateLimit-Reset | Number of seconds remaining till rate limit resets. |

Returns

| HTTP status code | Description |
|------------------|--|
| 202 | Expected response, contains the URL in the Location header to check the status of the request. |
| 400 | Invalid POST body. |
| 401 | Missing or invalid authentication. |
| 403 | User is forbidden access with current credentials. |
| 415 | Missing/Invalid Content-Type header. Header needs to be set to application/json. |
| 429 | Rate limit reached. Cancel older requests using Cancel Calculation endpoint or wait for older requests to finish / expire. |
| 500 | Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting. |
| 503 | Request timed out. Retry the request in sometime. |

Remarks

- Maximum 500 units allowed per request and across all simultaneous requests.

Examples

```

Request:
POST https://api.factset.com/analytics/engines/v2/calculations

Headers:
content-type: application/json
Authorization: Basic RkRTX0RFTU9fVVMt*****
    
```

Accept-Encoding: gzip
content-length: 201

Body:

```
{  
  "pub": {  
    "1": {  
      "document": "Client:folder1/folder2/Equity_Snapshot.PUB_BRIDGE_PDF",  
      "account": {  
        "id": "BENCH:SP50",  
        "holdingsmode": "B&H"  
      },  
      "dates": {  
        "startdate": "20170101",  
        "enddate": "20180101"  
      }  
    },  
    "2": {  
      "document": "Client:folder1/folder2/Risk_Snapshot.PUB_BRIDGE_PDF",  
      "account": {  
        "id": "BENCH:SP50"  
      },  
      "dates": {  
        "enddate": "20180107"  
      }  
    }  
  }  
}
```

Response:

HTTP 202 Accepted

Headers:

location: <https://api.factset.com/analytics/engines/v2/calculations/8F2D7849BBBED69A889B578B8CE43F9FE17C23FEFD67804A4B42449FEE2F4D78>
x-datadirect-request-key: zpdo6aebv58fiaoi
x-factset-api-request-key: 6p2d41m4sw1yfh0h

3.1.2 Get Calculation Status By ID

GET /analytics/engines/v2/calculations/{id}

Description

This is the endpoint to check on the progress of a previous request that was submitted using [Run Multiple Calculations](#) endpoint. The response body contains status information of the entire request and each individual calculation. If an individual calculation has finished computing, the result parameter in the response body will contain the result URL.

Request Headers

| Header name | Description |
|---------------|---|
| Authorization | Standard HTTP header. Value needs to use 'Basic <base64 encoded value>' format. |

Response Headers

| Header name | Description |
|-----------------------------------|---|
| X-DataDirect-Request-Key | FactSet's request key header. |
| X-FactSet-API-Request-Key | Key to uniquely identify an Analytics API request. Only available after successful authentication. |
| Cache-Control | Standard HTTP header. Header will specify max-age in seconds. Polling can be adjusted based on the max-age value. |
| X-FactSet-API-RateLimit-Limit | Number of allowed requests for the time window. |
| X-FactSet-API-RateLimit-Remaining | Number of requests left for the time window. |
| X-FactSet-API-RateLimit-Reset | Number of seconds remaining till rate limit resets. |

Returns

| HTTP status code | Description |
|------------------|---|
| 200 | Expected response. The response body contains status information of the entire request and each individual calculation. |
| 400 | Invalid identifier parameter provided. |
| 401 | Missing or invalid authentication. |
| 403 | User is forbidden access with current credentials. |
| 404 | There was no request for the identifier provided, or the request was already canceled for the provided identifier. |
| 500 | Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting. |
| 503 | Request timed out. Retry the request in sometime. |

Examples

```

Request:
GET
https://api.factset.com/analytics/engines/v2/calculations/8F2D7849BBBED69A889B578B8CE43F9FE17C23FEFD67804A4B42449FEE2F4D78
    
```

```

Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****

Response:
HTTP 200 Success

Headers:
x-datadirect-request-key: yxuvd73bjejn02ij
x-factset-api-request-key: 4nboxc5wctfzauq0

Body:
{
  "status": "Executing",
  "units": 2,
  "calculations": {
    "1": {
      "status": "Success",
      "result":
      "https://api.factset.com/analytics/engines/v2/calculations/8F2D7849BBBED69A889B578B8CE43
      F9FE17C23FEFD67804A4B42449FEE2F4D78/results/DD697278BC996FD99946587244C98244F13DBAFE9056
      F32A43E38ECC41587462"
    },
    "2": {
      "status": "Executing"
    }
  }
}

```

3.1.3 Get All Active Calculations

GET /analytics/engines/v2/calculations/

Description

This is the endpoint to check on the progress of all active requests.

Request Headers

| Header name | Description |
|----------------------|---|
| Authorization | Standard HTTP header. Value needs to use 'Basic <base64 encoded value>' format. |
| Accept | (Optional) Standard HTTP header. Value needs to be application/json. |

Response Headers

| Header name | Description |
|-----------------------------------|--|
| X-DataDirect-Request-Key | FactSet's request key header. |
| X-FactSet-API-Request-Key | Key to uniquely identify an Analytics API request. Only available after successful authentication. |
| X-FactSet-API-RateLimit-Limit | Number of allowed requests for the time window. |
| X-FactSet-API-RateLimit-Remaining | Number of requests left for the time window. |
| X-FactSet-API-RateLimit-Reset | Number of seconds remaining till rate limit resets. |

Returns

| HTTP status code | Description |
|------------------|---|
| 200 | List of outstanding active calculations. |
| 401 | Missing or invalid authentication. |
| 403 | User is forbidden access with current credentials. |
| 406 | Unsupported Accept header. Header needs to be set to application/json. |
| 500 | Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting. |
| 503 | Request timed out. Retry the request in sometime. |

Examples

```

Request:
GET https://api.factset.com/analytics/engines/v2/calculations/

Headers:
Authorization: Basic RkRXTX0RFTU9fVVMt*****

Response:
HTTP 200 OK

Headers:
x-datadirect-request-key: 1dn9wrqj9w9juddx
x-factset-api-request-key: 5jwq73yzz5qvni3q

Body:
{
  "F7BFEBDBAD3DEA7D79EF1DA7F13E54BCC282032DDBEA4495BC33B30DF5BD2A00": {
    "status": "Executing",
    "units": 2,

```

```

"requestTime": "2019-02-04T22:21:33.877Z",
"lastPollTime": "2019-02-04T22:22:24.05Z"
},
"FCC47C2D9EA3B33DAB8E4CE127173280C83B6FAB15263AF8D0E2A5CDDBB563E9": {
  "status": "Completed",
  "units": 1,
  "requestTime": "2019-02-04T22:21:14.693Z",
  "lastPollTime": "2019-02-04T22:21:14.693Z"
}
}

```

3.1.4 Cancel Multiple Calculations

DELETE /analytics/engines/v2/calculations/{id}

Description

This endpoint is used to cancel a previously submitted request. Instead of doing a HTTP GET on the status URL, cancel the request by doing a HTTP DELETE.

Request Headers

| Header name | Description |
|---------------|---|
| Authorization | Standard HTTP header. Value needs to use 'Basic <base64 encoded value>' format. |

Response Headers

| Header name | Description |
|-----------------------------------|--|
| X-DataDirect-Request-Key | FactSet's request key header. |
| X-FactSet-Api-Request-Key | Key to uniquely identify an Analytics API request. Only available after successful authentication. |
| X-FactSet-Api-RateLimit-Limit | Number of allowed requests for the time window. |
| X-FactSet-Api-RateLimit-Remaining | Number of requests left for the time window. |
| X-FactSet-Api-RateLimit-Reset | Number of seconds remaining till rate limit resets. |

Returns

| HTTP status code | Description |
|------------------|--|
| 204 | Expected response, request was cancelled successfully. |
| 400 | Invalid identifier parameter provided. |
| 401 | Missing or invalid authentication. |
| 403 | User is forbidden access with current credentials. |

| | |
|-----|--|
| 404 | There was no request for the identifier provided, or the request was already canceled for the provided identifier. |
| 500 | Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting. |
| 503 | Request timed out. Retry the request in sometime. |

Examples

```

Request:
DELETE
https://api.factset.com/analytics/engines/v2/calculations/8F2D7849BBED69A889B578B8CE43F9FE17C23FEFD67804A4B42449FEE2F4D78

Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****

Response:
HTTP 204 No Content

Headers:
x-datadirect-request-key: iwkitryrtam8l8z1
x-factset-api-request-key: dx8wju5k6ogb2rp8
    
```

3.2 Lookup APIs

3.2.1 Account Lookup

GET /analytics/lookups/v2/accounts/{path}

Description

This endpoint returns a list of account and composite files as well as the directories these files can be found under. Account names from this endpoint can be used in [Run Multiple Calculations](#). If no path is provided, a list of root level directories is returned, which can then be passed again to this endpoint to retrieve accounts and sub-directories.

Request Headers

| Header name | Description |
|---------------|---|
| Authorization | Standard HTTP header. Value needs to use 'Basic <base64 encoded value>' format. |
| Accept | (Optional) Standard HTTP header. Value needs to be application/json. |

Response Headers

| Header name | Description |
|-------------|-------------|
|-------------|-------------|

| | |
|----------------------------------|--|
| X-DataDirect-Request-Key | FactSet’s request key header. |
| X-FactSet-API-Request-Key | Key to uniquely identify an Analytics API request. Only available after successful authentication. |
| Age | Standard HTTP header. Age of cache in seconds. |

Returns

| HTTP status code | Description |
|------------------|---|
| 200 | Expected response. |
| 400 | Invalid query parameter or value provided. |
| 401 | Missing or invalid authentication. |
| 403 | User is forbidden access with current credentials. |
| 404 | Path not found. |
| 406 | Unsupported Accept header. Header needs to be set to application/json. |
| 500 | Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting. |
| 503 | Request timed out. Retry the request in sometime. |

Examples

```

Request:
GET https://api.factset.com/analytics/lookups/v2/accounts/

Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****

Response:
HTTP 200 Success

Headers:
x-datadirect-request-key: 564d5a1d49ffluj
x-factset-api-request-key: 1gm8zeczlyj3w6bd

Body:
{
  "directories": [
    "Client:",
    "Factset:"
  ]
}
    
```

```

Request:
GET https://api.factset.com/analytics/lookups/v2/accounts/Client%3Afolder1/folder2/

Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****

Response:
HTTP 200 Success

Headers:
x-datadirect-request-key: 564d5a1d49ffluj
x-factset-api-request-key: 1gm8zeczlyj3w6bd

Body:
{
  "accounts": [
    "ACCOUNT1.ACCT",
    "COMPOSITE1.ACTM"
  ],
  "directories": [
    "folder3",
    "folder4"
  ]
}

```

3.2.2 Document Lookup

GET /analytics/lookups/v2/engines/pub/documents/{path}

Description

This endpoint returns a list of Publisher documents as well as the directories these files can be found under. Document names from this endpoint can be used in [Run Multiple Calculations](#). If no path is provided, a list of root level directories is returned, which can then be passed again to this endpoint to retrieve documents and sub-directories.

Request Headers

| Header name | Description |
|---------------|---|
| Authorization | Standard HTTP header. Value needs to use 'Basic <base64 encoded value>' format. |
| Accept | (Optional) Standard HTTP header. Value needs to be application/json. |

Response Headers

| Header name | Description |
|---------------------------|--|
| X-DataDirect-Request-Key | FactSet's request key header. |
| X-FactSet-API-Request-Key | Key to uniquely identify an Analytics API request. Only available after successful authentication. |
| Age | Standard HTTP header. Age of cache in seconds. |

Returns

| HTTP status code | Description |
|------------------|---|
| 200 | Expected response. |
| 400 | Invalid query parameter or value provided. |
| 401 | Missing or invalid authentication. |
| 403 | User is forbidden access with current credentials. |
| 404 | Path not found. |
| 406 | Unsupported Accept header. Header needs to be set to application/json. |
| 500 | Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting. |
| 503 | Request timed out. Retry the request in sometime. |

Examples

```

Request:
GET https://api.factset.com/analytics/lookups/v2/engines/pub/documents/

Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****

Response:
HTTP 200 Success

Headers:
x-datadirect-request-key: 564d5a1d49ffluj
x-factset-api-request-key: 1gm8zeczlyj3w6bd

Body:
{
  "directories": [
    "Client:",
    "Factset:"
  ]
}
    
```

```
}

```

```
Request:
GET https://api.factset.com/analytics/lookups/v2/engines/pub/documents/Client%3Afolder1/folder2/

Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****

Response:
HTTP 200 Success

Headers:
x-datadirect-request-key: 564d5a1d49fffluvj
x-factset-api-request-key: 1gm8zeczlyj3w6bd

Body:
{
  "documents": [
    "Equity_Snapshot.PUB_BRIDGE_PDF",
    "Risk_Snapshot.PUB_BRIDGE_PDF"
  ],
  "directories": [
    "folder3",
    "folder4"
  ]
}
```

4. Troubleshooting

Following steps are recommended to troubleshoot errors from any of the different APIs:

- Record the X-DataDirect-Request-Key response header so that FactSet's API engineering team can analyze your specific request/response.
- Record the response body when the response is an error response. All HTTP status codes equal to and greater than 400 are considered error responses.
- Reach out to your account team with the above information for assistance.

5. Version Upgrade

FactSet will support old API versions for a limited time. The actual support time will depend on the API and the release stage (i.e., beta or production). All breaking changes, functionality additions, and bug fixes across earlier versions will be documented in the changelog.

FactSet's API engineering team will work with the clients to ensure smooth transition to newer versions.

6. Appendix: Supported Date Formats

Absolute Date Formats

| Format | Description | Examples |
|------------|-------------------------|----------------------------------|
| MM/DD/YYYY | A day. | 7/11/2016, 1/1/2015, 3/6/2014. |
| MM/YYYY | A month end. | 6/2016, 4/2015, 11/2014, 5/2013. |
| YYYY/MMF | A fiscal quarter end. | 2016/3F, 2015/2F. |
| YYYY/MMC | A calendar quarter end. | 2016/1C, 2015/3C. |
| YYYY | A fiscal year end. | 2016, 2015. |

Relative Date Formats

| Format | Examples |
|--------|--|
| D | 0D is the most recently completed trading day, -1D is one trading day prior. |
| AW | 0AW is the most recently completed trading day, -1AW is the one actual week (7 days) prior to the most recently completed trading day. |
| W | 0W is the last day of the most recently completed trading week (usually Friday), -1W is the last trading day of the prior week. |
| AM | 0AM is the most recently completed trading day, -1AM is the same day, one actual month prior. |
| M | 0M is the last trading day of the most recent month, -1M is the last trading day of the prior month. |
| Q | 0Q is the last trading day of the company's most recent fiscal quarter, -1Q is the last day of the prior fiscal quarter. |
| CQ | 0CQ is the last trading day of the most recent calendar quarter (March, June, September, or December), -1CQ is the last trading day of the prior calendar quarter. |
| AY | 0AY is the most recently completed trading day, -1AY is one actual year (365 days) prior. |
| Y | 0Y is the last trading day of the company's most recent fiscal year, -1Y is the last trading day of the prior fiscal year. |
| CY | 0CY is the last trading day of the most recent calendar year (the last trading day in December), -1CY is the last trading day of the prior calendar year. |
| M/D/Y | M, D, and Y can be zero, negative, or a positive number. |

Examples: 0/0/-1 is the day one year ago, 0/-7/0 is the day one week ago, -1/0/0 is the day one month ago, 12/31/-1 is the day at the end of last year.

Special FactSet Date Identifiers

The user needs to set the following properties in their account (.ACCT/.ACTM file) if they wish to use these identifiers:

| Identifier | Definition |
|--------------------|---|
| INCEPTION | Date the account was created. This typically corresponds to the first day of data in the holdings portfolio. |
| ALTERINCEPTION | Alternative date option to define when the portfolio was created. This is helpful in cases where the inception date isn't the official day the portfolio was created. |
| TERMINATION | Date the account is terminated. |
| END_OF_LAST_FISCAL | End of last fiscal year. |

7. Appendix: Run Multiple Calculations Request Body Scenarios

Below table lists down multiple calculation scenarios to help understand the points breakdown.

| Request Body | Description |
|--|--|
| <pre>{ "pub": { "1": { "document": "Client:folder1/folder2/Equity_Snapshot.PUB_BRIDGE_PDF", "account": { "id": "BENCH:SP50", "holdingsmode": "B&H" }, "dates": { "startdate": "20170101", "enddate": "20180101" } }, "2": { "document": "Client:folder1/folder2/Risk_Snapshot.PUB_BRIDGE_PDF", "account": { "id": "BENCH:SP50" }, "dates": { "enddate": "20180107" } } } }</pre> | <p>No. of Calculations: 2</p> <p><u>Calculation 1</u> No. of Accounts: 1 No. of Points: 1 x 1 = 1</p> <p><u>Calculation 2</u> No. of Accounts: 1 No. of Points: 1 x 1 = 1</p> <p><u>Total</u> No. of Points: 1 + 1 = 2</p> |