FACTSET ❯ SEE THE ADVANTAGE

SPAR ENGINE API - VERSION 3.0
Developer's Manual and Reference
July 2023

SPAR Engine API – Version 3.0

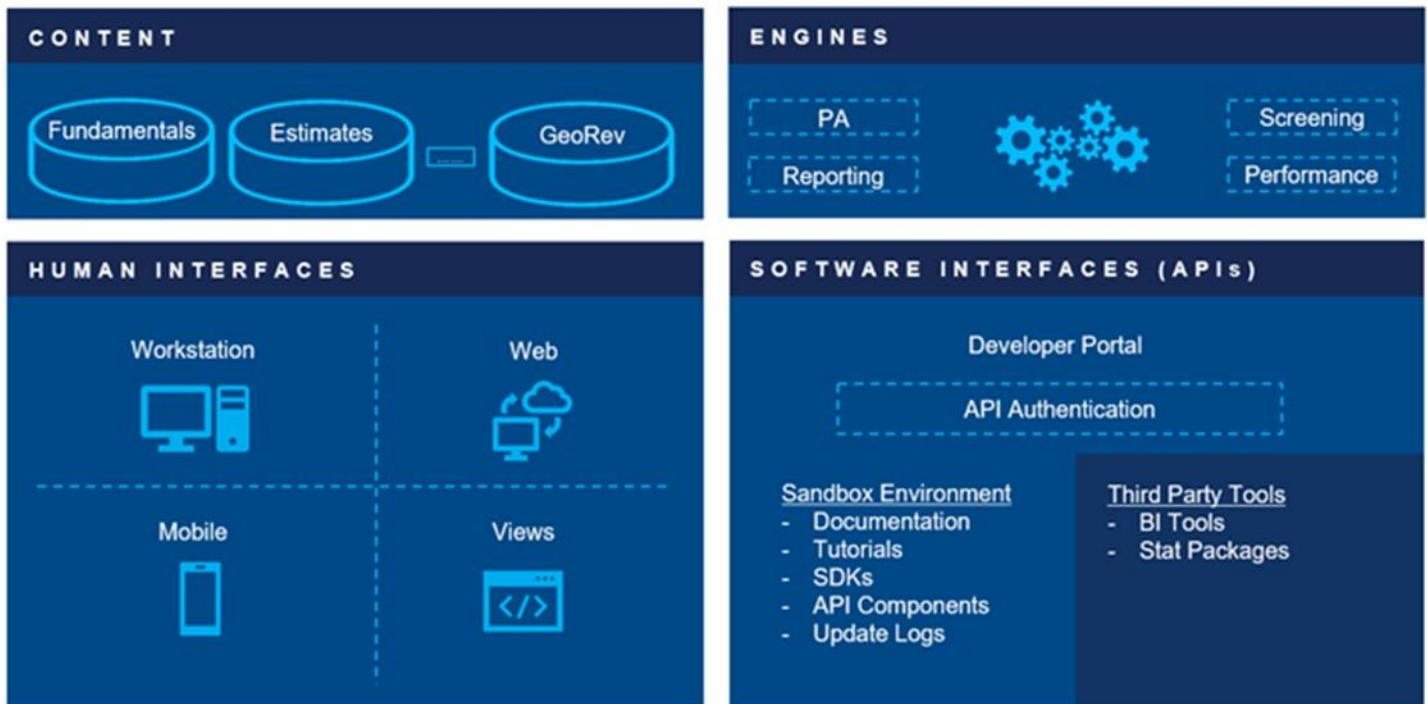**FACTSET** 〉 SEE THE ADVANTAGE

Contents

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. SPAR Engine API

Measure performance, risk, style, and characteristics for multiple portfolios and asset classes with best-in-class, flexible reports and charts. With faster reporting and automated calculations, go from data to decision first. FactSet's full range of portfolio analytics combines all the data and flexibility you need to examine your portfolio across asset classes and strategies.

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/spar/v3/calculations

Description

This endpoint runs the SPAR calculation specified in the POST body parameters. It can take one or more units as input. 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

Parameter name	Data type	Required	Description	Format
data	Array	Yes	List of calculations to compute for each component.	Each calculation represented by an object containing calculation inputs. See below for schema and example values.
meta	Object	Yes	Allows users to specify the response format and stachContentOrganization	Valid format values are 'JsonStach' and 'Binary'. Default is 'JsonStach'. Valid stachContentOrganization values are 'Row', 'Column, 'SimplifiedRow', and 'None'. Default is 'SimplifiedRow'. Please refer to the STACH v2 documentation here for more information on STACH v2 format types.

Below are the calculation parameters supported by data section:

Parameter name	Data type	Required	Description	Format
componentid	String	Yes	The SPAR Engine component identifier to analyze.	Component ID can be fetched using the SPAR Engine Components Lookup API.
accounts	Array	Yes	List of user's FactSet account paths OR benchmarks.	Account Identifier must have .ACCT or .ACTM extension or BENCH: prefix. Please refer https://my.apps.factset.com/oa/pages/21344#create for creating accounts that can be uploaded through nightly parsers or https://developer.factset.com/api-catalog/model-portfolio-api for creating prospective accounts with model holdings.
benchmark	Object	No	User's FactSet account path OR a benchmark.	Account Identifier must have .ACCT or .ACTM extension or BENCH: prefix.
dates	Object	No	Date range(s) and frequency to run against. Object takes frequency, startdate and enddate.	Supported Date Formats and Frequency Lookup API.

Response Headers

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.

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
200	Expected response if the calculation has one unit and is completed with an error.
201	Expected response if the calculation has one unit and is completed in a short span, returns JSON in the format specified in the Calculation parameters.
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.
404	One or more calculation settings were unavailable.
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	Service unavailable. Retry the request in sometime.

Supported Date Formats

Absolute Date Formats

Format	Description	Examples
YYYYMMDD	A day.	20161107, 20150101, 20140603.
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.

Remarks

- Maximum 50 POST requests allowed in a 5 second window for each API. The same can be verified using the various Rate-Limit headers available in the API response.

  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.

- Maximum 1000 units allowed per request and across all simultaneous requests.
- Any settings in POST body will act as a one-time override over the settings saved in the SPAR template.
- Multi-horizon frequencies are not supported through this endpoint.
- To specify a benchmark's return type, clients can either append the benchmark name with a ':' (i.e., MSCI_EM_N:899800) or by specifying the prefix separately in the "prefix" field. Clients can use a benchmark's prefix to directly specify the return type, as there is a one-to-one mapping between a benchmark's return type and its prefix.
- Please refer to the STACH v2 documentation [here](#) for more information on STACH v2 format types
- The stored result 12-hour period is applied to each individual calculation unit after it completes. It is not applied to the entire calculation.

Caching Remarks

- *All results will be cached for 12 hours by default.* This means that by default (without sending any cache-control headers), after the first request successfully completes, all subsequent requests with unchanged request parameters will return the same results for 12 hours.

- Setting the max-stale=<staleness limit in seconds> allows you to fetch pre-calculated results with any subsequent POST requests, as long as they were last calculated within the staleness limit.
  - Once set, the API will check to see if the stored results are within the staleness limit.
    - If they are within the limit, then the request will return the cached results, allowing for a quick response and eliminating unnecessary points accrual.
    - If the results are not within the limit, a brand-new calculation request will be triggered to get the latest results.
- To immediately request the latest results, override the cache by setting "max-stale=0" in the Cache-control header parameter.
- Changes made to the underlying SPAR document via the workstation will not trigger a results re-calculation. The cache-control parameter should be set to "max-stale=0" to immediately request the latest results
- The max cache-control value is "max-stale=43200" (12 hours)

- The cached result period is applied to each individual calculation unit after it completes. It is not applied to the entire calculation.

Examples

```
Request:
POST:https://api.factset.com/analytics/engines/spar/v3/calculations


Headers:
content-type: application/json
Authorization: Basic RkRTX0RFTU9fVVMt****************************
Accept-Encoding:  gzip
content-length: 201
content-type: application/json


Body:
{
    "data": {
        "calc1": {
            "componentid": "E26D4FFFD0F4B5B8F0970A053939D79A5DE90959858D2580D029E98A4DDA28B7",
            "accounts": [
                {
                    "id": "R.1000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"
                }
            ],
            "benchmark": {
                "id": "R.2000",
                "returntype": "GTR",
                "prefix": "RUSSELL"
            },
            "dates": {
                "startdate": "-2M",
                "enddate": "0",
                "frequency": "Monthly"
            }
        },

        "calc2": {
            "componentid": "E26D4FFFD0F4B5B8F0970A053939D79A5DE90959858D2580D029E98A4DDA28B7",
            "accounts": [
                {
                    "id": "R.1000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"
                },
```

```
                {
                    "id": "R.2000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"
                }
            ],
            "benchmark": {
                "id": "R.2000",
                "returntype": "GTR",
                "prefix": "RUSSELL"
            }
        }
    },

    "meta": {
        "stachContentOrganization": "SimplifiedRow",
        "format": "JsonStach"
    }
}
```

Response:

HTTP 202 Accepted

Headers:

location:https://api.factset.com/analytics/engines/spar/v3/calculations/f7a86e0ccca54c428a4ca66
        2627dca54/status
x-datadirect-request-key: 60bdb0767890008f
x-factset-api-request-key: 60bdb076441b7b14

3.1.2   Create and Update SPAR Calculation

PUT /analytics/engines/v3/spar/calculations

Description

This endpoint can be used to either:

- Create a new SPAR calculation(s) with a custom id specified in the id path parameter
- Update calculation parameters and run a pre-existing SPAR calculation

Like the POST endpoint, the PUT endpoint must be used first, before checking status or cancelling endpoints. A successful response will contain the URL to check the status of the request. If the **X-FactSet-Api-Long-Running-Deadline** header is passed, then this endpoint will return calculation results in the response if the calculation completes within the specified amount of time.

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).
X-FactSet-Api-Long-Running-Deadline	Long running deadline in seconds when only one unit is passed in the POST body. The endpoint will return calculation results in the response if it completes within the specified amount of time (rather than return the status polling URL) Max value is 20 seconds.
Cache-Control	Standard HTTP header that holds caching instructions. max-stale is the only supported directive. It indicates that the client will accept a stale response, the value (in seconds) denotes the upper time limit for the stale response. Note that all results are cached for 12 hours, to override the default cache and trigger a new request, set max-stale=0. Max value is 43200 seconds (12 hours). For more information on caching, see the Caching Remarks section.

Request Body

Like the POST endpoint, the request body is made up of the following 2 objects, "data" which holds calculation parameters, and "meta" which specifies the response's STACH content type and formatting.

Object name	Required	Description	Format
data	Yes	Parent object for the request body	List of calculation parameters
meta	No	Allows users to specify the response format and stachContentOrganization	Valid format values are 'JsonStach' and 'Binary'. Default is 'JsonStach'. Valid stachContentOrganization values are 'Row', 'Column, 'SimplifiedRow', and 'None'. Default is 'SimplifiedRow'. Please refer to the STACH v2 documentation here for more information on STACH v2 format types.

The calculation parameters within the "data" object are outlined below:

Parameter name	Data type	Required	Description	Format
componentid	String	Yes	The SPAR Engine component identifier to analyze.	Component ID can be fetched using the SPAR Engine Components Lookup API.

accounts	Array	Yes	List of user's FactSet account paths OR benchmarks.	Account Identifier must have .ACCT or .ACTM extension or BENCH: prefix. Please refer https://my.apps.factset.com/oa/pages/21344#create for creating accounts that can be uploaded through nightly parsers or https://developer.factset.com/api-catalog/model-portfolio-api for creating prospective accounts with model holdings.
benchmark	Object	No	User's FactSet account path OR a benchmark.	Account Identifier must have .ACCT or .ACTM extension or BENCH: prefix.
dates	Object	No	Date range(s) and frequency to run against. Object takes frequency, startdate and enddate.	Supported Date Formats and Frequency Lookup API.

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.
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
200	Expected response if the calculation has one unit and is completed with an error
201	Expected response if the calculation has one unit and is completed in a short span or pre-defined span via the X-FactSet-Api-Long-Running-Deadline header. Returns JSON in the format specified in the Calculation parameters
202	Expected response, contains the URL in the Location header to check the status of the request.

400	Invalid calculation parameters.
401	Missing or invalid authentication.
403	User is forbidden access with current credentials.
404	One or more calculation settings were unavailable.
409	Duplicate calculation exists with same parameters.
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	Service unavailable. Retry the request in some time.

Supported Date Formats

Absolute Date Formats

Format	Description	Examples
YYYYMMDD	A day.	20161107, 20150101, 20140603.
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.

Remarks

- Maximum 50 POST requests allowed in a 5 second window for each API. The same can be verified using the various Rate-Limit headers available in the API response.

    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.

- Maximum 1000 units allowed per request and across all simultaneous requests.

- Any settings in POST body will act as a one-time override over the settings saved in the SPAR template.

- Multi-horizon frequencies are not supported through this endpoint.

- To specify a benchmark's return type, clients can either append the benchmark name with a ':' (i.e., MSCI_EM_N:899800) or by specifying the prefix separately in the "prefix" field. Clients can use a benchmark's prefix to directly specify the return type, as there is a one-to-one mapping between a benchmark's return type and its prefix.
- Please refer to the STACH v2 documentation [here](#) for more information on STACH v2 format types
- The stored result 12-hour period is applied to each individual calculation unit after it completes. It is not applied to the entire calculation.

Caching Remarks

- *All results will be cached for 12 hours by default.* This means that by default (without sending any cache-control headers), after the first request successfully completes, all subsequent requests with unchanged request parameters will return the same results for 12 hours.

- Setting the max-stale=<staleness limit in seconds> allows you to fetch pre-calculated results with any subsequent POST requests, as long as they were last calculated within the staleness limit.
  - o Once set, the API will check to see if the stored results are within the staleness limit.
    - ▪ If they are within the limit, then the request will return the cached results, allowing for a quick response and eliminating unnecessary points accrual.
    - ▪ If the results are not within the limit, a brand-new calculation request will be triggered to get the latest results.
- To immediately request the latest results, override the cache by setting "max-stale=0" in the Cache-control header parameter.
- Changes made to the underlying SPAR document via the workstation will not trigger a results re-calculation. The cache-control parameter should be set to "max-stale=0" to immediately request the latest results
- The max cache-control value is "max-stale=43200" (12 hours)
- The cached result period is applied to each individual calculation unit after it completes. It is not applied to the entire calculation.

Examples

```
Request:
PUT https://api.factset.com/analytics/engines/spar/v3/calculations/custom-id


Request Headers:
content-type: application/json
Authorization:   Basic    RkRTX0RFTU9fVVMt****************************
Accept-Encoding:  gzip


Request:
PUT https://api.factset.com/analytics/engines/spar/v3/calculations/custom-id
```

Request Headers:

```
content-type: application/json
Authorization:    Basic    RkRTX0RFTU9fVVMt*****************************
Accept-Encoding: gzip
```

Body:

```
{
    "data": {
        "calc1": {
            "componentid": "E26D4FFFD0F4B5B8F0970A053939D79A5DE90959858D2580D029E98A4DDA28B7",
            "accounts": [
                {
                    "id": "R.1000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"
                }
            ],
            "benchmark": {
                "id": "R.2000",
                "returntype": "GTR",
                "prefix": "RUSSELL"
            },
            "dates": {
                "startdate": "-11M",
                "enddate": "0",
                "frequency": "Monthly"
            }
        },

        "calc2": {
            "componentid": "E26D4FFFD0F4B5B8F0970A053939D79A5DE90959858D2580D029E98A4DDA28B7",
            "accounts": [
                {
                    "id": "R.1000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"
                },
                {
                    "id": "R.2000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"
                }
            ],
            "benchmark": {
                "id": "R.2000",
                "returntype": "GTR",
```

```
                "prefix": "RUSSELL"
            }
        }
    },

    "meta": {
        "stachContentOrganization": "SimplifiedRow",
        "format": "JsonStach"
    }
}
```

Response:
```
HTTP 202 Accepted
{
  "data": {
    "calculationid": "custom-id",
    "status": "Queued",
    "units": {
      "calc1": {
        "status": "Executing"
      },
      "calc2": {
        "status": "Queued"
      }
    }
  }
}
```

Response Headers:
```
x-datadirect-request-key: 60d0200802766861
x-factset-api-request-key: 60d020085dce0f0d
location: https://api.factset.com/analytics/engines/spar/v3/calculations/custom-id/status
```

3.1.3 Get Calculation Status By ID

GET /analytics/engines/spar/v3/calculations/{id}/status

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. Otherwise, the calculation is still running, and the X-FactSet-Api-PickUp-Progress header will contain a progress percentage.

Request Headers

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

Path Parameters

Name	Required	Description
id	Yes	From url, provided from the location header in the Create and Run SPAR calculation endpoint

Response Headers

Header name	Description
Content-Encoding	Standard HTTP header. Header value based on Accept-Encoding Request header.
Content-Type	Standard HTTP header.
Transfer-Encoding	Standard HTTP header. Header value will be set to Chunked if Accept-Encoding header is specified.
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.
X-FactSet-Api-PickUp-Progress	Percentage of progress completed for this request

Returns

HTTP status code	Description
200	Expected response once the calculation is completed. The response body contains status information of the entire request and each individual calculation.
202	Expected response returned if the calculation is not yet completed. Contains X-FactSet-Api-PickUp-Progress header with a percentage of progress completed
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	Service unavailable. Retry the request in sometime.

Examples

```
Request:
GET
https://api.factset.com/analytics/engines/spar/v3/calculations/f7a86e0ccca54c428a4ca662627dca54
/status

Request Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****************************


Response:
HTTP 200 Success

Response Headers:
x-datadirect-request-key: 60d021521d9f13fc
```

```
x-factset-api-request-key: 60d021522d3d8234
x-factset-api-pickup-progress: 50


Body:
{
  "data": {
    "calculationid": "0c0a17af3e0e495282ec59aa83e9669c",
    "status": "Completed",
    "units": {
      "calc1": {
        "status": "Success",
        "result":
"https://api.factset.com/analytics/engines/spar/v3/calculations/f7a86e0ccca54c428a4ca662627dca5
4/units/1/result",
        "progress": "100"
      },

      "calc2": {
        "status": "Success",
        "result":
"https://api.factset.com/analytics/engines/spar/v3/calculations/f7a86e0ccca54c428a4ca662627dca5
4/units/1/result",
        "progress": "100"
      }
    }
  }
}
```

3.1.4   Get Calculation Results By ID

GET /analytics/engines/spar/v3/calculations/{id}/units/{unitId}/result

Description

This is the endpoint to get the result of a previously requested calculation. If the calculation has finished computing, the body of the response will contain the requested document in JSON.

Request Headers

Header name	Description
Accept	(Optional) Standard HTTP header. Value can be gzip, compress, deflate, br, identity and/or

Path Parameters

Name	Required	Description
id	Yes	Calculation id. From url, provided from the location header in the Create and Run SPAR calculation endpoint
unitId	Yes	Unit id. from url, provided from the location header in the Get SPAR calculation status by id endpoint

Response Headers

Header name	Description
Content-Encoding	Standard HTTP header. Header value based on Accept-Encoding Request header.
Content-Type	Standard HTTP header.
Transfer-Encoding	Standard HTTP header. Header value will be set to Chunked if Accept-Encoding header is specified.
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	Expected response once calculation is completed, returns JSON in the format specified in the Calculation parameters.
400	Invalid identifier provided.
401	Missing or invalid authentication.
403	User is forbidden access with current credentials.

404	Calculation was already returned, provided id was not a requested calculation, or the calculation was cancelled
500	Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting.
503	Service unavailable. Retry the request in sometime.

Examples

```
Request:
GET
https://api.factset.com/analytics/engines/spar/v3/calculations/f7a86e0ccca54c428a4ca662627dca54
/units/1/result

Request Headers:
Authorization: Basic RkRTX0RFTU9fVVMt******************************

Response:
HTTP 200 Success

Response Headers:
x-datadirect-request-key: 60d023590c886a8f
x-factset-api-request-key: 60d023595ca07609

Body:
See a sample SimplifiedRow formatted response here
```

3.1.5 Get ALL Calculations

GET /analytics/engines/spar/v3/calculations

Description

This endpoint returns all calculation requests. The data is sorted in descending order by request time and by default one page will fetch 20 calculations.

Request Headers

Header name	Description
Accept	(Optional) Standard HTTP header. Value can be gzip, compress, deflate, br, identity and/or

Query Parameters

Name	Required	Type	Description
pageNumber	Yes	Integer	Page number

Response Headers

Header name	Description
Content-Encoding	Standard HTTP header. Header value based on Accept-Encoding Request header.
Content-Type	Standard HTTP header.
Transfer-Encoding	Standard HTTP header. Header value will be set to Chunked if Accept-Encoding header is specified.
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.

Response Body Parameters

Header name	Description
data	Parent object of the response body
meta	Contains pagination details

Data object includes following parameters -

Header name	Description
status	Status of the calculation id . E.g. completed, failed, queued, executing etc.
units	Number of units for a calculation request.

requestTime	Time at which the calculation request was made.
lastPollTime	Time at which the calculation was last polled.

Meta object includes following parameters -

Header name	Description
pageNumber	Number of the page requested.
pageSize	Number of requests in a page.
totalPages	Total number of pages at a given time.
totalCalculation	Total number of calculations at a given time.
nextPage	Following page number.
lastPage	Previous page number

Returns

HTTP status code	Description
200	List of calculation requests.
400	Invalid page number.
401	Missing or invalid authentication.
403	User is forbidden with current credentials.
404	No calculation found.
406	Unsupported Accept header. Header needs to be set to application/json.
429	Rate limit reached. Wait till the time specified in Retry-After header value to make further requests.
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/spar/v3/calculations?pageNumber=1

Response:
HTTP 200 OK

Response Headers:
x-datadirect-request-key: 62F37DDF0C271FC6
x-factset-api-request-key: 62F37DDFF7F8E679

Body:
```
{
  "data": {
    "6b9e1eecd7a645089b9c9ad786953c84": {
      "status": "Completed",
      "units": 1,
      "requestTime": "2022-08-10T09:43:28.567396Z",
      "lastPollTime": "2022-08-10T09:43:28.567396Z"
    }
  },
  "meta": {
    "pagination": {
      "pageNumber": 1,
      "pageSize": 20,
      "totalPages": 1,
      "totalCalculations": 1,
      "nextPage": null,
      "previousPage": null
    }
  }
}
```

3.1.6 Get Calculation Parameters By ID

GET /analytics/engines/spar/v3/calculations/{id}

Description

This endpoint that returns the calculation parameters passed for a calculation.

Path Parameters

Name	Required	Description
id	Yes	Calculation id. From url, provided from the location header in the Create and Run SPAR calculation endpoint

Response Headers

Header name	Description
Content-Encoding	Standard HTTP header. Header value based on Accept-Encoding Request header.
Content-Type	Standard HTTP header.
Transfer-Encoding	Standard HTTP header. Header value will be set to Chunked if Accept-Encoding header is specified.
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	Expected response, returns the SPAR calculation parameters.
400	Invalid identifier provided.
401	Missing or invalid authentication.

403	User is forbidden access with current credentials.
404	Calculation id not found.
500	Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting.
503	Service unavailable. Retry the request in sometime.

Examples

```
Request:
GET
https://api.factset.com/analytics/engines/spar/v3/calculations/f7a86e0ccca54c428a4ca662627dca54


Response:
HTTP 200 OK


Response Headers:
x-datadirect-request-key: 60d0210e2135a083
x-factset-api-request-key: 60d0210ed14c6b96


Body:
{
  "data": {
    "calc1": {
      "componentid": "e26d4fffd0f4b5b8f0970a053939d79a5de90959858d2580d029e98a4dda28b7",
      "accounts": [
        {
          "id": "r.1000",
          "returntype": "gtr",
          "prefix": "russell"
        }
      ],
      "benchmark": {
        "id": "r.2000",
        "returntype": "gtr",
        "prefix": "russell"
      },
      "dates": {
```

```
      "startdate": "-2m",
      "enddate": "0",
      "frequency": "monthly"
    }
  },
  "calc2": {
    "componentid": "e26d4fffd0f4b5b8f0970a053939d79a5de90959858d2580d029e98a4dda28b7",
    "accounts": [
      {
        "id": "r.1000",
        "returntype": "gtr",
        "prefix": "russell"
      },
      {
        "id": "r.2000",
        "returntype": "gtr",
        "prefix": "russell"
      }
    ],
    "benchmark": {
      "id": "r.2000",
      "returntype": "gtr",
      "prefix": "russell"
    },
    "dates": null
  }
},
"meta": {
  "stachContentOrganization": "SimplifiedRow",
  "format": "JsonStach"
}
}
```

3.1.7   Cancel Calculation by ID

DELETE /analytics/engines/spar/v3/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.

Path Parameters

Name	Required	Description
id	Yes	Calculation id. From url, provided from the location header in the Create and Run SPAR calculation endpoint

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	Service unavailable. Retry the request in sometime.

Examples

```
Request:
DELETE
https://api.factset.com/analytics/engines/spar/v3/calculations/f7a86e0ccca54c428a4ca662627dca54

Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****************************

Response:
HTTP 204 No Content

Headers:
x-datadirect-request-key: 60d024eb1496ad24
x-factset-api-request-key: 60d024eb4629c3a6
```

3.2 Lookup APIs

3.2.1   Components Lookup

GET /analytics/engines/spar/v3/components?document={documentname}

Description

This endpoint returns a list of components within a SPAR document. Run Multiple Calculations expects component identifiers returned by this endpoint.

Component identifiers are of variable-length and are expected to change. Users should always use this API before calling Run Multiple Calculations.

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.

Request Query Parameters

Parameter name	Data type	Description	Format
document	String	SPAR document name.	FactSet-root:/document-path. Possible values for FactSet-root are client, personal, super_client, or pa_documents.

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	Expected response.

400	Invalid query parameter/value provided.
401	Missing or invalid authentication.
403	User is forbidden access with current credentials.
404	Document not found.
406	Unsupported Accept header. Header needs to be set to application/json.
429	Rate limit reached. Wait till the time specified in Retry-After header value to make further requests.
500	Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting.
503	Service unavailable. Retry the request in sometime.

Example

```
Request:
GET https://api.factset.com/analytics/engines/spar/v3/components?document=(SPAR Document Name)

Request Headers:
Authorization: Basic RkRTX0RFTU9fVVMt****************************
Response:
HTTP 200 Success

Response Headers:
x-datadirect-request-key: 60d028fb18b484d2
x-factset-api-request-key: 60d028fcca20766a

Body:
{
  "E26D4FFFD0F4B5B8F0970A053939D79A5DE90959858D2580D029E98A4DDA28B7": {
    "name": "Returns Table",
    "category": "Raw Data / Returns"
  },
  "E87A23361859F0B232F0BC9065B3FF71CD17591A2AC6A23E24AB3E23853F024F": {
    "name": "Cumulative Returns Table",
    "category": "Raw Data / Returns"
  },
}
```

3.2.2 Components Settings Lookup

GET /analytics/engines/spar/v3/components/{id}

Description

This endpoint returns settings for a given SPAR document

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-Reset	Number of seconds remaining till rate limit resets.
X-FactSet-Api-RateLimit-Remaining	Number of requests left for the time window.

Returns

HTTP status code	Description
200	Expected response.
400	Invalid component identifier.
401	Missing or invalid authentication.
403	User is forbidden access with current credentials.
404	Component not found.
406	Unsupported Accept header. Header needs to be set to application/json.
429	Rate limit reached. Wait till the time specified in Retry-After header value to make further requests.
500	Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting.

503	Service unavailable. Retry the request in sometime.

Example

```
Request:
GET
https://api.factset.com/analytics/engines/spar/v3/components/067F5DE2E2A11F9AD734594AA8957E11B6
33438D0FADFCCE0F423ABEF2FC5F1D

Request Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****************************

Response:
HTTP 200 Success

Response Headers:
x-datadirect-request-key: 60d028fb18b484d2
x-factset-api-request-key: 60d028fcca20766a
Body:
{
  "data": {
    "id": "067F5DE2E2A11F9AD734594AA8957E11B633438D0FADFCCE0F423ABEF2FC5F1D",
    "accounts": [

    ],
    "benchmarks": {
      "id": null,
      "returntype": null,
      "prefix": null
    },
    "currencyIsoCode": "USD",
    "path": "spar_documents:/factset default document;5;1X9e8MsWpZz",
    "name": "Returns Table",
    "category": "Raw Data / Returns"
  }
}
```

3.2.3 Currency Lookup

GET /analytics/lookups/v3/currencies

Description

This endpoint returns a list of supported currencies.

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	Expected response.
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.

429	Rate limit reached. Wait till the time specified in Retry-After header value to make further requests.
500	Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting.
503	Service unavailable. Retry the request in sometime.

Examples

```
Request:
GET https://api.factset.com/analytics/lookups/v3/currencies

Headers:

Authorization: Basic RkRTX0RFTU9fVVMt****************************

Response:

HTTP 200 Success

Response Headers:

x-datadirect-request-key: fns911nz73wv6hb4

x-factset-api-request-key: m2h184putr0jctn4

Body:

{
  "data": {
    "USD": {
      "name": " U.S. Dollar"
    },
    "JPY": {
      "name": "Japanese Yen"
    }
  }
}
```

3.2.4   Account Lookup

GET /analytics/lookups/v3/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.

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.
429	Rate limit reached. Wait till the time specified in Retry-After header value to make further requests.

500	Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting.
503	Service unavailable. Retry the request in sometime.

Examples

```
Request:
GET https://api.factset.com/analytics/lookups/v3/accounts


Request Headers:
Authorization: Basic RkRTX0RFTU9fVVMt****************************


Response:
HTTP 200 Success


Response Headers:
x-datadirect-request-key: 564d5a1d49ffluvj
x-factset-api-request-key: 1gm8zeczlyj3w6bd


Body:
{
    "data":{
        "directories":[
            "Client:",
            "Personal:",
            "Super_client:"
        ]
    }
}


Request:
GET https://api.factset.com/analytics/lookups/v3/accounts/Client%3Afolder1


Request Headers:
Authorization: Basic RkRTX0RFTU9fVVMt****************************


Response:
HTTP 200 Success


Response Headers:
x-datadirect-request-key: 564d5a1d49ffluvj
```

```
x-factset-api-request-key: 1gm8zeczlyj3w6bd

Body:
{
    "data":{
        "accounts":[
            "TEST.ACCT"
        ],
        "directories":[
            "test1",
            "test2"
        ]
    }
}
```

3.2.5   Document Lookup

GET /analytics/engines/spar/v3/documents/{path}

Description

This endpoint returns a list of SPAR documents as well as the directories these files can be found under. Document names from this endpoint can be used in Components Lookup. 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.

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.
429	Rate limit reached. Wait till the time specified in Retry-After header value to make further requests.
500	Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting.
503	Service unavailable. Retry the request in sometime.

Examples

```
Request:
GET https://api.factset.com/analytics/lookups/v2/engines/spar/documents/Client%3A%2Faapi

Request Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****************************

Response:
HTTP 200 Success

Response Headers:
x-datadirect-request-key: 564d5a1d49ffluvj
x-factset-api-request-key: 1gm8zeczlyj3w6bd

Body:
{
    "data":{
        "documents":[
            " SPAR3_QA_TEST_DOCUMENT "
        ],
        "directories":[
```

```
            "test1",
            "test2"
        ]
    }
}


Request:
GET https://api.factset.com/analytics/engines/spar/v3/documents

Request Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****************************

Response:
HTTP 200 Success

Response Headers:
x-datadirect-request-key: 564d5a1d49ffluvj
x-factset-api-request-key: 1gm8zeczlyj3w6bd

Body:
{
    "data":{
        "directories":[
            "Client:",
            "Personal:",
            "Super_client:",
            "FactSet:"
        ]
    }
}
```

3.2.6   Benchmarks Lookup

GET /analytics/engines/spar/v3/benchmarks

Description

This endpoint returns the details of a given SPAR benchmark identifier.

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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.

Returns

HTTP status code	Description
200	Expected response.
400	Invalid benchmark identifier.
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.
429	Rate limit reached. Wait till the time specified in Retry-After header value to make further requests.
500	Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting.
503	Service unavailable. Retry the request in sometime.

Examples

```
Request:
GET https://api.factset.com/analytics/engines/spar/v3/benchmarks?id=R.1000


Request Headers:
Authorization: Basic RkRTTX0RFTU9fVVMt*****************************
```

```
Response:
HTTP 200 Success

Response Headers:
x-datadirect-request-key: 60d02c9315c71e37
x-factset-api-request-key: 60d02c9321cb6781

Body:
{
  "data": {
    "id": "R.1000",
    "name": "Russell 1000",
    "identifiers": [
      {
        "id": "R.1000",
        "returntype": "P",
        "prefix": "RUSSELL_P"
      },
      {
        "id": "R.1000",
        "returntype": "GTR",
        "prefix": "RUSSELL"
      },
      {
        "id": "R.1000",
        "returntype": "NTR",
        "prefix": "RUSSELL_N"
      }]
    }
  }
```

3.2.7 Frequency Lookup

GET /analytics/engines/spar/v3/frequencies

Description

This endpoint returns a list of supported frequencies.

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.

Returns

HTTP status code	Description
200	Expected response.
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.
429	Rate limit reached. Wait till the time specified in Retry-After header value to make further requests.
500	Server error. Log the X-DataDirect-Request-Key header to assist in troubleshooting.
503	Service unavailable. Retry the request in sometime.

Examples

Request:
GET https://api.factset.com/analytics/engines/spar/v3/frequencies

Request Headers:
Authorization: Basic RkRTX0RFTU9fVVMt****************************

Response:
HTTP 200 Success

Response Headers:
x-datadirect-request-key: fns911nz73wv6hb4
x-factset-api-request-key: m2h184putr0jctn4

Body:
```
{
  "data": {
    "Annually": {
      "name": "Annually"
    },
    "Quarterly": {
      "name": "Quarterly"
    },
    "Monthly": {
      "name": "Monthly"
    },
    "Weekly": {
      "name": "Weekly"
    },
    "Daily": {
      "name": "Daily"
    }
  }
}
```

---

4. Troubleshooting

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

- Calculation specific endpoints (POST, PUT, GET Status, GET Results, GET All Calculations)
    - o Record the below response headers so that FactSet's API support team can analyze your specific request/response:
        - ▪ x-factset-api-calculation-instance-id
        - ▪ x-factset-api-calculation-id
        - ▪ x-datadirect-request-key
    - o 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.
    - o Reach out to your account team with the above information for assistance.

- Lookups endpoints (GET Components, GET Components by id, GET Accounts, GET Groups etc.)
    - o Record the x-datadirect-request-key response header so that FactSet's API support team can analyze your specific request/response.
    - o 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.
    - o 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: Run Multiple Calculations Request Body Scenarios

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

Request Body	Description

<pre>{
    "data": {
        "calc1": {
            "componentid":
"E26D4FFFD0F4B5B8F0970A053939D79A5DE90959858D2580D029E98A4DDA28B7",
            "accounts": [
                {
                    "id": "R.1000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"
                },
                {
                    "id": "R.2000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"
                }
            ],
            "benchmark": {
                "id": "R.2000",
                "returntype": "GTR",
                "prefix": "RUSSELL"
            }
        }
    }
}</pre>
	No. of Calculations: 1
	
	Calculation 1
	No. of Accounts: 2
	No. of Benchmarks: 1
	No. of Points: 2 x 1 = 1
	
	Total
	No. of Points: 2

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```json
{
    "data": {
        "calc1": {
            "componentid":
"E26D4FFFD0F4B5B8F0970A053939D79A5DE90959858D2580D029E98A4DDA28B7",
            "accounts": [
                {
                    "id": "R.1000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"
                }
                {
                    "id": "R.2000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"

                ],
                "benchmark": {
                    "id": "R.1000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"
                },
                "dates": {
                    "startdate": "-2M",
                    "enddate": "0",
                    "frequency": "Monthly"
                }
        },
        "calc2": {
            "componentid":
"E26D4FFFD0F4B5B8F0970A053939D79A5DE90959858D2580D029E98A4DDA28B7",
            "accounts": [
                {
                    "id": "R.1000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"
                },
                {
                    "id": "R.2000",
                    "returntype": "GTR",
                    "prefix": "RUSSELL"
                }
            ],
            "benchmark": {
                "id": "R.2000",
                "returntype": "GTR",
                "prefix": "RUSSELL"
            }
        }
    }
}
```

No. of Calculations: 2

Calculation 1
No. of Accounts: 2
No. of Benchmarks: 1
No. of Points: 2 x 1 = 3

Calculation 2
No. of Accounts: 2
No. of Benchmarks: 1
No. of Points: 2 x 1 = 2

Total
No. of Points: 2 + 2 = 4