FACTSET 〉 SEE THE ADVANTAGE

PORTFOLIO ANALYSIS COMPONENTS MANAGER
API - VERSION 3.0
Developer's Manual and Reference
April 2022

FACTSET ⟩ SEE THE ADVANTAGE

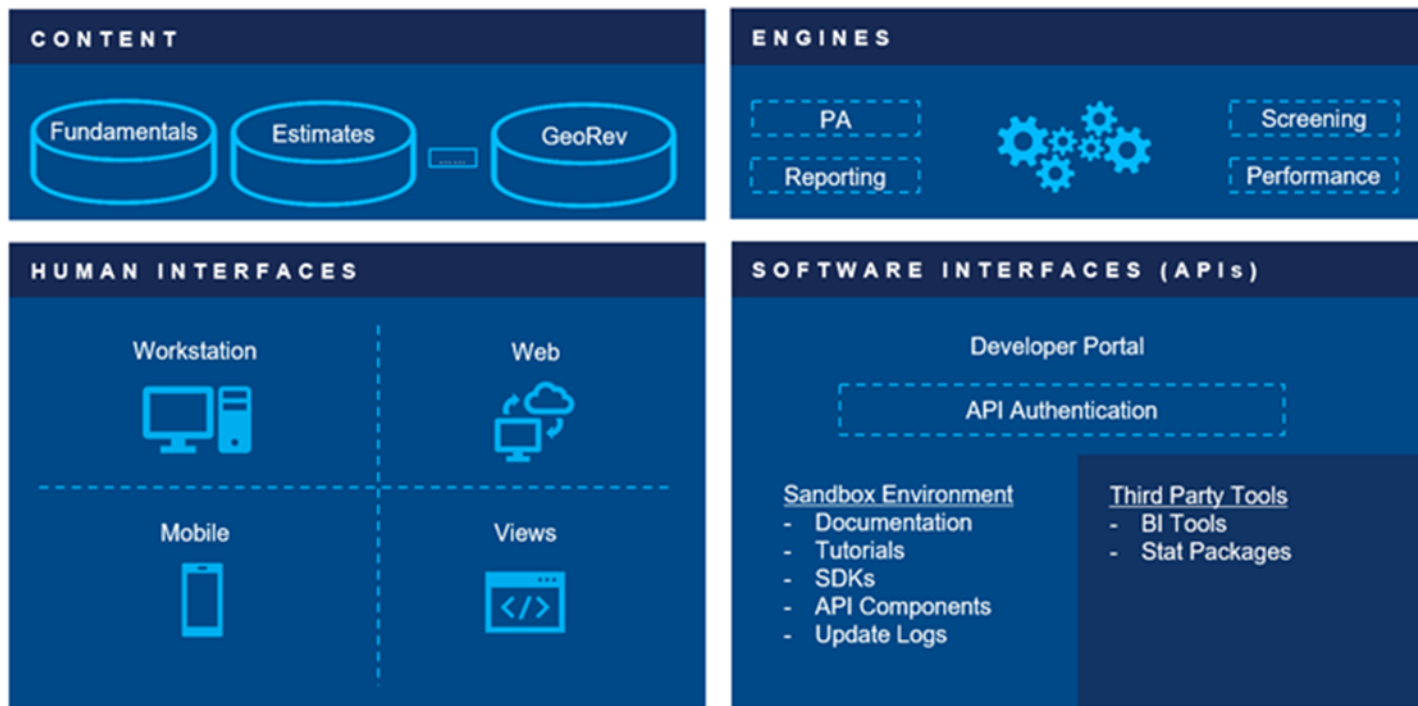# Components Manager API – Version 1.0

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 Components Manager API

Leverage the Components Manager API endpoints to create custom report shells for FactSet's portfolio analytics. Users can create standalone custom report types, leverage PA reports, and override existing options.

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 Unlinked Template APIs

3.1.1 Create Unlinked Template

POST /analytics/engines/pa/v3/unlinked-templates

This endpoint creates a customized report shell (unlinked document template) based on user specifications.

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 parameters. The parameters are outlined below:

Parameter name	Data type	Required	Description	Format
directory	String	Yes	Location of Report	Standard FDS Directory c personal: unlinked-templates/
description	String	No	Description of report	Report Name 'S&P 500 Weights Report', 'Small Cap Fixed Income Attribution Report'
templateTypeId	String	Yes	Type of report	Displays the type of report. Use Template ID GET request to obtain ID.

accounts	Array	No	List of user's FactSet account paths OR benchmarks.	Account identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every 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. Please refer to https://my.apps.factset.com/oa/pages/21343 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.
benchmarks	Array	No	List of user's FactSet account paths OR benchmarks to compare against.	Benchmark identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every benchmark. Possible values for holdings mode are B&H (Buy and Hold), TBR (Transaction based returns) or OMS. Default holdings mode value is B&H.
columns	Array	No	List of columns	Columns can be fetched from the Columns look up. /analytics/engines/pa/v3/columns
dates	Object	No	Date range(s) to run against. Object takes startdate, enddate and frequency.	Supported Date Formats and Frequency Lookup.
datasources	Array	No	List of pricing sources to return the accurate results.	For example, in order to calculate official benchmark returns, use an MSCI pricing source for MSCI benchmarks.
groups	Array	No	List of groups for calculation.	Groups can be fetched from Groups Lookup.
currencyisocode	String	No	Currency ISO code for calculation.	E.g., USD. Currency ISO codes can be fetched using the Currency Lookup.
componentdetail	String	No	Degree of granularity to return in the PA component	Valid values are 'groups', 'totals', and securities. If empty, the API defaults to 'security'.
content	Object	No	Define mandatory, optional, locked fields	Mandatory/optional/locked fields can be, 'accounts', 'benchmarks', 'groups', 'columns', 'dates', 'currencyisocode' 'componentdetail'.

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
201	Expected response, created an unlinked template.
400	Invalid data provided. Please check the request parameters before attempting again.
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	Request timed out. Retry the request in sometime.

Remarks

- Mandatory and locked strings are mutually exclusive.
- Mandatory fields are required to be passed in POST request and Optional fields are not necessary. If no mandatory fields are passed, then we can use the template as a component and skip the component creation.
- We cannot override the Locked fields when creating the Component.
- Any settings in POST body will act as a one-time override over the settings saved in the PA template.
- Multi-horizon frequencies are not supported through this endpoint.
- componentdetail supports securities, groups and totals as well but if we don't pass anything that defaults to securities..
- If we are overriding grouping frequency without overriding the group id it will not be applied to the default groupings saved to the original component.

- If we are overriding the grouping with a frequency, we will be overriding the grouping saved to the original component and also overriding the default frequency of the Beginning of Period to whatever we pass in the request body.

Examples

Request:

POST https://api.factset.com/analytics/engines/pa/v3/unlinked-templates

Headers:

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

Request Body:

```
{
  "data": {
    "directory": "Personal:UnlinkedPATemplates/",
    "templateTypeId": "996E90B981AEE83F14029ED3D309FB3F03EC6E2ACC7FD42C22CBD5D279502CFD",
    "description": "This is an unlinked PA template that only returns security level data",
    "accounts": [
      {
        "id": "SPN:SP50",
        "holdingsmode": "B&H"
      },
      {
        "id": "MSCI_USA:984000",
        "holdingsmode": "B&H"
      }
    ],
    "benchmarks": [
      {
        "id": "SPN:SP50",
        "holdingsmode": "B&H"
      },
      {
        "id": "DJGX:AMERICAS",
        "holdingsmode": "B&H"
      }
    ],
    "columns": [
      {
```

```
      "id": "BD1720474AB8A80BDD79777F5B9CA594F4151C0554E30F9C916BA73BFAFC1FE0",
      "statistics": [
        "eb9d6d91416e4224bacadc261787e56f"
      ]
    }
  ],
  "dates": {
    "startdate": "20200101",
    "enddate": "20201215",
    "frequency": "Monthly"
  },
  "groups": [
    {
      "id": "5BCFFD17598FAEBD88EB4934EFB5FEF53849867D607ECEF232CD42D3369BBBCA"
    }
  ],
  "currencyisocode": "USD",
  "componentdetail": "GROUPS",
  "content": {
    "mandatory": [
      "accounts",
      "benchmarks"
    ],
    "optional": [
      "groups",
      "columns"
    ],
    "locked": [
      "dates"
    ]
  }
 }
}
```

Response Body:
```
{
    "data": {
        "id": "1fb8eacd3f6d431e9313b140f583b3cf",
        "description": "This is an Unlinked Template that only return security level data",
        "name": "personal:demo/1fb8eacd3f6d431e9313b140f583b3cf.UNLINKED_PA_TEMPLATE",
        "category": "Weights"
    }
}
```

Response:
HTTP 201 Expected response, created an unlinked PA template

Headers:

```
location:
x-datadirect-request-key: zpdo6aebv58fiaoi
x-factset-api-request-key: 6p2d41m4sw1yfh0h
```

3.1.2   Get Unlinked Templates by ID

GET /analytics/engines/pa/v3/unlinked-templates/{id}

Description

This endpoint fetches unlinked report templates based on a specific ID.

Request Headers

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

Response Body Schema

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, unlinked PA template details.
400	Invalid data provided. Please check the request parameters before attempting again.
401	Missing or invalid authentication.
404	Template not found
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	Request timed out. Retry the request in sometime.

Example

Request:

GET   https://api.com/analytics/engines/pa/v3/unlinked-
      templates/996E90B981AEE83F14029ED3D309FB3F03EC6E2ACC7FD42C22CBD5D279502CFD

Headers:

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

Response:

HTTP 200   Expected response, get details of the unlinked PA template.

Headers:

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

Response Body:
```
{
  "data": {
    "directory": "Personal:UnlinkedPATemplates/",
    "id": null,
    "templateTypeId":
      "996E90B981AEE83F14029ED3D309FB3F03EC6E2ACC7FD42C22CBD5D279502CFD",
    "snapshot": true,
    "accounts": [
      {
        "id": "SPN:SP50",
        "holdingsmode": "B&H"
      },
      {
        "id": "MSCI_USA:984000",
        "holdingsmode": "B&H"
      }
    ],
    "benchmarks": [
      {
        "id": "SPN:SP50",
        "holdingsmode": "B&H"
      },
      {
        "id": "DJGX:AMERICAS",
        "holdingsmode": "B&H"
      }
    ],
    "columns": [
```

```
      {
        "id":
       "BD1720474AB8A80BDD79777F5B9CA594F4151C0554E30F9C916BA73BFAFC1FE0",
         "statistics": [
           "eb9d6d91416e4224bacadc261787e56f"
         ]
      }
    ],
    "dates": {
      "startdate": "20200101",
      "enddate": "20201215",
      "frequency": "60"
    },
    "groups": [
      {
        "id": "5BCFFD17598FAEBD88EB4934EFB5FEF53849867D607ECEF232CD42D3369BBBCA"
      }
    ],
    "currencyisocode": "USD",
    "componentdetail": "GROUPS",
    "content": {
      "mandatory": [
        "accounts",
        "benchmarks"
      ],
      "optional": [
        "groups",
        "columns"
      ],
      "locked": [
        "dates"
      ]
    },
    "description": "This is an unlinked PA template that only returns security
      level data",
    "name": null,
    "category": "Weights"
  }
}
```

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3.1.3   Get Unlinked Templates by Category

GET /analytics/engines/pa/v3/unlinked-templates

Description

Fetch unlinked report templates by 1) from a specific category (e.g., 'Weights') or 2) from a specific path (e.g., Personal:UninkedPATemplates/). The category is specified in the postbody.

Request Headers

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

Response Body Schema

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, unlinked PA template details.
400	Invalid data provided "Please check the request parameters before attempting again".
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 until 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/pa/v3/unlinkedtemplates/category=Weights

Headers:

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

Response:

HTTP 200 Expected response, returns a list of unlinked PA templates.

Headers:

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

Response Body:
```
    {
  "data": {
    "d387c965061d4fa4b4ef6450949c0331": {
      "description": "This is an unlinked PA template that only returns security level data",
      "name":
       "Personal:UnlinkedPATemplates/d387c965061d4fa4b4ef6450949c0331.UNLINKED_PA_TEMPLATE",
      "category": "Weights"
    },
    "b2f68bd178af4c4f81929a65baa0d8b6": {
      "description": "This is an unlinked PA template that only returns security level data",
      "name":
       "Personal:UnlinkedPATemplates/b2f68bd178af4c4f81929a65baa0d8b6.UNLINKED_PA_TEMPLATE",
      "category": "Weights"
    },
    "839c450278e94c019c81393a946f0750": {
      "description": "This is an unlinked PA template that only returns security level data",
      "name":
       "Personal:UnlinkedPATemplates/839c450278e94c019c81393a946f0750.UNLINKED_PA_TEMPLATE",
      "category": "Weights"
    }
  }
}
```

3.1.4   Get Default Unlinked Template Types

GET /analytics/engines/pa/v3/unlinked-templates/template-types

Description

This endpoint fetches all default unlinked PA template types.

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
200	Expected response, default unlinked PA template types
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	Request timed out. Retry the request in sometime.

Examples

Request:

GET   https://api.factset.com/analytics/engines/pa/v3/unlinked-templates/template-types

Headers:

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

Response:

HTTP 200   Expected response, default unlinked PA template type

Headers:

content-encoding: br
 content-type: application/json
 transfer-encoding: chunked
 vary: Accept-Encoding,Origin
 x-factset-api-request-key: 6123B55FC386C522

Response Body:

 {
  "data": {
    "996E90B981AEE83F14029ED3D309FB3F03EC6E2ACC7FD42C22CBD5D279502CFD": {
      "category": "Weights",
      "name": "Weights"
    },
    "A4BD67A4906BC0B02F3F72F25E6B7D85838F9B69C02BA0147F811747BB05B151": {
      "category": "Weights",
      "name": "Weights Difference"
    },
    "19C0D067DDE67468D74DD2247558E29C53AACDF6878534BC8913477BABF166F5": {
      "category": "Weights",
      "name": "Top 5 Positions"
    },

3.1.5   Get Unlinked Template Type Details by ID

GET /analytics/engines/pa/v3/unlinked-templates/template-types/{id}

Description

This endpoint fetches the unlinked PA template type details.

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
200	Expected response, details of the unlinked PA template type
400	Invalid data provided "Please check the request parameters before attempting again".
401	Missing or invalid authentication.
403	User is forbidden access with current credentials.
404	Unlinked PA template type 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	Request timed out. Retry the request in sometime.

Request:

GET https://api.factset.com/analytics/engines/pa/v3/unlinked-templates/template-types/996E90B981AEE83F14029ED3D309FB3F03EC6E2ACC7FD42C22CBD5D279502CFD

Response:

HTTP 200 Expected response, details of the unlinked PA template type

Headers:

x-datadirect-request-key: yxuvd73bjejn02ij

x-factset-api-request-key: 4nboxc5wctfzauq0

Response Body:

```
{
    "data": {
        "id": "996E90B981AEE83F14029ED3D309FB3F03EC6E2ACC7FD42C22CBD5D279502CFD",
        "columns": [
            {
                "name": "Security Name",
                "id": "4CEC18D45CCEA237F0C72E2E01F06C543DF3B72AC75DE93CA25DAC4C821EEC4C"
            },
            {
                "name": "Port.\r\nWeight",
                "id": "44C486E34C7E1F5CE2B481D441BC1433C791070CE8E23596890102DA9785A1FD"
            },
            {
                "name": "Bench.\r\nWeight",
                "id": "61F53FD426BF48DC0D7E756A7BCD1A7C96983A6E7CAAE13691F8056B978DB9C7"
            },
            {
                "name": "Difference",
                "id": "5DD1567659E91DDF4726A34F74D6A6F71627203B6A5A3AF07ED54AB328EEA158"
            }
        ],
        "groups": [
            {
                "name": "Economic Sector",
                "id": "76B9D1311717B495527B04570DC32A3D730AD6C1E91DE92CDBE65ADB5C757527"
            },
            {
                "name": "Industry",
                "id": "8FFD269DB8C514933A1F93E47876D0D30F0AC059AF7F729C039A45F3B3E0964C"
            }
        ],
        "snapshot": true,
        "category": "Weights",
        "name": "Weights"
    }
}
```

3.1.6   Update Unlinked Template by ID

PUT /analytics/engines/pa/v3/unlinked-templates/{id}

Description

This endpoint updates an existing unlinked template from the client-provided id.

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.

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

Parameter name	Data type	Required	Description	Format
description	String	No	Description of Report	Report Name 'S&P 500 Weights Report', 'Small Cap Fixed Income Attribution Report'

accounts	Array	No	List of user's FactSet account paths OR benchmarks.	Account identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every 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. 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.
benchmarks	Array	No	List of user's FactSet account paths OR benchmarks to compare against.	Benchmark identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every benchmark. Possible values for holdings mode are B&H (Buy and Hold), TBR (Transaction based returns) or OMS. Default holdings mode value is B&H.
columns	Array	No	List of Columns	Columns can be fetched from the Columns look up. /analytics/engines/pa/v3/columns.
dates	Object	No	Date range(s) to run against. Object takes startdate, enddate and frequency.	Supported Date Formats and Frequency Lookup.
datasources	Array	No	List of pricing sources to return the accurate results.	For example, in order to calculate official benchmark returns, use an MSCI pricing source for MSCI benchmarks.
groups	Array	No	List of groups for calculation.	Groups can be fetched from Groups Lookup.
currencyisocode	String	No	Currency ISO code for calculation.	E.g., USD. Currency ISO codes can be fetched using the Currency Lookup.
componentdetail	String	No	Degree of granularity to return in the PA component	Valid values are 'groups', 'totals', and 'security'. Default value is 'security'.
content	Array	No	Define mandatory, optional, locked fields	Mandatory/optional/locked fields can be, 'accounts', 'benchmarks', 'groups', 'columns', 'dates', 'currencyisocode' 'componentdetail'.

Returns

HTTP status code	Description
200	Expected response, updated the unlinked PA template.
400	Invalid data provided "Please check the request parameters before attempting again".
401	Missing or invalid authentication.
403	User is forbidden access with current credentials.
404	Template 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	Request timed out. Retry the request in sometime.

Remarks

- Mandatory and locked strings are mutually exclusive.

- Mandatory fields are required to be passed in POST request and Optional fields are not necessary. If no mandatory fields are passed, then we can use the template as a component and skip the component creation.

- We cannot override the Locked fields when creating the Component.

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

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

- componentdetail supports securities, groups and totals as well but if we don't pass anything that defaults to securities..

- If we are overriding grouping frequency without overriding the group id it will not be applied to the default groupings saved to the original component.

- If we are overriding the grouping with a frequency, we will be overriding the grouping saved to the original component and also overriding the default frequency of the Beginning of Period to whatever we pass in the request body.

Examples

Request:

PUT https://api.factset.com/analytics/engines/pa/v3/unlinked-templates/
d387c965061d4fa4b4ef6450949c0331

Headers:

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

Response:

200 Expected response, updated the unlinked PA template.

Headers:

x-datadirect-request-key: 1dn9wrqj9w9juddx
x-factset-api-request-key: 5jwq73yzx5qvni3q

Request Body:

```
{
  "data": {
    "description": "This is an unlinked PA template that only returns security level
      data",
    "accounts": [
      {
        "id": "SPN:SP50",
        "holdingsmode": "B&H"
      },
      {
        "id": "MSCI_USA:984000",
        "holdingsmode": "B&H"
      }
    ],
    "benchmarks": [
      {
        "id": "SPN:SP50",
        "holdingsmode": "B&H"
      },
      {
        "id": "DJGX:AMERICAS",
```

```
      "holdingsmode": "B&H"
    }
  ],
  "columns": [
    {
      "id": "BD1720474AB8A80BDD79777F5B9CA594F4151C0554E30F9C916BA73BFAFC1FE0",
      "statistics": [
        "eb9d6d91416e4224bacadc261787e56f"
      ]
    }
  ],
  "dates": {
    "startdate": "20200101",
    "enddate": "20201215",
    "frequency": "Monthly"
  },
  "groups": [
    {
      "id": "5BCFFD17598FAEBD88EB4934EFB5FEF53849867D607ECEF232CD42D3369BBBCA"
    }
  ],
  "currencyisocode": "USD",
  "componentdetail": "GROUPS",
  "content": {
    "mandatory": [
      "accounts",
      "benchmarks"
    ],
    "optional": [
      "columns"
    ],
    "locked": [
      "groups"
    ]
  }
 }
}
```

Repsonse Body:

```
{
  "data": {
    "d387c965061d4fa4b4ef6450949c0331": {
      "description": "This is an unlinked PA template that only returns security
level data",
      "name":
"Personal:UnlinkedPATemplates/d387c965061d4fa4b4ef6450949c0331.UNLINKED_PA_TEMPLATE",
      "category": "Weights"
    }
  }
}
```

3.1.7   Delete Unlinked Template by ID

DELETE /analytics/engines/pa/v3/unlinked-templates/{id}

Description

This endpoint is used to delete unwanted unlinked templates from the client-provided id.

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, deleted the unlinked PA template successfully.
400	Invalid data provided "Please check the request parameters before attempting again"..
401	Missing or invalid authentication.
403	User is forbidden access with current credentials.
404	Template 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	Request timed out. Retry the request in sometime.

Examples

```
Request:
DELETE   https://api.factset.com/analytics/engines/pa/v3/unlinked-
         templates/8a85dbc280344c38a3cc9a5ccb1e4ac0


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


Response:
HTTP 204
Expected response, deleted the unlinked PA template successfully.


Headers:
x-datadirect-request-key: iwkitryrtam8l8zl
x-factset-api-request-key: dx8wju5k6ogb2rp8
```

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3.2 PA Report Template APIs

3.2.2   Create PA Template

POST /analytics/engines/pa/v3/linked-templates

Description

This endpoint creates a template from an existing Portfolio Analysis Tile, allowing the user to replicate and fetch reports settings.

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	Required	Description	Format
Directory	String	Yes	**Where user wants to store template**	FactSet-root:/document-path. Possible values for FactSet-root are client, personal, super_client, or pa_documents.
parentcomponentid	string	Yes		Existing PA Report ID. Fetched using the Components Endpoint
description	string	Yes		Description of new report
accounts	Array	No	List of user's FactSet account paths OR benchmarks.	Account identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every 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. 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.

benchmarks	Array	No	List of user's FactSet account paths OR benchmarks to compare against.	Benchmark identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every benchmark. Possible values for holdings mode are B&H (Buy and Hold), TBR (Transaction based returns) or OMS. Default holdings mode value is B&H.
columns	Array	Yes	List of Columns	Columns can be fetched from the Columns look up. /analytics/engines/pa/v3/columns (/analytics/engines/pa/v3/columns)
currencyisocode	String	No		E.g., USD. Currency ISO codes can be fetched using the Currency Lookup.
componentdetail	String	No	Degree of granularity to return in the PA component	Valid values are 'groups', 'totals', and 'securities'. Default value is 'securities'.
dates	Object	No	Date range(s) to run against. Object takes startdate, enddate and frequency.	Supported Date Formats and Frequency Lookup.
datasources	Array	No	List of pricing sources to return the accurate results.	For example, in order to calculate official benchmark returns, use an MSCI pricing source for MSCI benchmarks.
groups	Array	No	List of groups for calculation.	Groups can be fetched from Groups Lookup.

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
201	Expected response, created a template linked to a PA3 tile..
400	Invalid data provided "Please check the request parameters before attempting again".
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	Request timed out. Retry the request in sometime.

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Examples

Request:

POST https://api.factset.com/analytics/engines/pa/v3/linked-templates

Headers:

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

Response:

201 Expected response, created a template linked to a PA3 tile.

Headers:

x-factset-api-request-key: 6123BCE5F9DFF62E

Request Body:

```
{
  "data": {
    "directory": "Personal:LinkedPATemplates/",
    "parentComponentId": "801B800245E468A52AEBEC4BE31CFF5AF82F371DAEF5F158AC2E98C2FA324B46",
    "description": "This is a linked PA template that only returns security level data",
    "content": {
      "mandatory": [
        "accounts",
        "benchmarks"
      ],
      "optional": [
        "groups",
        "columns"
      ],
      "locked": [
        "componentdetail"
      ]
    }
  }
}
```

Response Body:

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```
{
  "data": {
    "183b2b4dac884a50b4d9d327861942f9": {
      "description": "This is a linked PA template that only returns security level data",
      "name": "Personal:LinkedPATemplates/183b2b4dac884a50b4d9d327861942f9.LINKED_PA_TEMPLATE",
      "parentComponentId": "801B800245E468A52AEBEC4BE31CFF5AF82F371DAEF5F158AC2E98C2FA324B46"
    }
  }
}
```

3.2.2 Get PA Template by ID

GET /analytics/engines/pa/v3/linked-templates/{id}

Description

This endpoint fetches the linked PA template settings for a client-provided id.

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, returns a list of templates linked to PA3 tile
400	Invalid data provided "Please check the request parameters before attempting again".
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	Request timed out. Retry the request in sometime.

Examples

```
Request:
GET    https://api.factset.com/analytics/engines/pa/v3/linked-templates/803BDFF5-9DF4-4C24-A755-
       D5BE2B460689
Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****************************

Response:
HTTP 200 Expected response, linked PA template details

Headers:
x-datadirect-request-key: 0zsbdmxnltzw3aeg
x-factset-api-request-key: lipbij4lhxcoiney

Response Body:

{
  "data": {
    "directory": "Personal:",
    "snapshot": true,
    "content": {
      "mandatory": [
        "accounts",
        "benchmarks"
      ],
      "optional": [
        "groups",
        "columns"
      ],
      "locked": [
        "componentdetail"
      ]
    },
    "id": "6c82bfe91d5243ce88d47c33709108c7",
    "description": "JS_TEST_10",
    "name": "Personal:6c82bfe91d5243ce88d47c33709108c7.LINKED_PA_TEMPLATE",
    "parentComponentId": "801B800245E468A52AEBEC4BE31CFF5AF82F371DAEF5F158AC2E98C2FA324B46"
  }
}
```

3.2.3   Get PA Template by Path

GET /analytics/engines/pa/v3/linked-templates

Description

This endpoint returns the list of PA templates in given path.

Get linked PA templates in path -- e.g.,   PERSONAL:

Get linked PA templates for documents in document path – e.g., CLIENT:

Get linked PA templates for documents by document name - e.g., pa3_documents:default

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.
400	Invalid data provided. Please check the request parameters before attempting again..
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.

409	Template Already Exists
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/pa/v3/linked-
        templates?documentDirectory=CLIENT
Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****************************


Response:
HTTP 200 Expected response, returns a list of templates linked to PA3 tile.


Headers:
x-datadirect-request-key: 0zsbdmxnltzw3aeg
x-factset-api-request-key: lipbij4lhxcoiney


Response Body:

{
  "data": {
    "803BDFF5-9DF4-4C24-A755-D5BE2B460689": {
      "description": "test",
      "name": "CLIENT:API_TEMPLATE/803bdff5-9df4-4c24-a755-d5be2b460689.PA3_API_TEMPLATE",
      "parentComponentId": "DA5DDC144627952D0B79B4715F122394497900E183B3E9CCC1A63EB6F23B1860"
    },
    "B1569BF6-BE1F-4715-85AE-05F71A97C3FF": {
      "description": "API DEMO Presentation",
      "name": "CLIENT:API_TEST/b1569bf6-be1f-4715-85ae-05f71a97c3ff.PA3_API_TEMPLATE",
      "parentComponentId": "DA5DDC144627952D0B79B4715F122394497900E183B3E9CCC1A63EB6F23B1860"
    },
    "D63F057A-E166-47B6-A1FF-E35BB7550C8B": {
      "description": "API Component",
      "name": "CLIENT:API_TEMPLATED63F057A-E166-47B6-A1FF-E35BB7550C8B.PA3_API_TEMPLATE",
      "parentComponentId": "DA5DDC144627952D0B79B4715F122394497900E183B3E9CCC1A63EB6F23B1860"
    },
  }
}
```

3.2.4   Update PA Template

PUT /analytics/engines/pa/v3/linked-templates/{id}

Description

This endpoint allows the user to change the request body and description from an existing template from the client-provided id.

Request Headers

Header name	Description
Authorization	Standard HTTP header. Value needs to use 'Basic <base64 encoded value>' format.
Cache-Control	(Optional) Standard HTTP header. Use no-cache directive to get latest groupings and refresh cache.
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.

Request Query Parameters

Parameter name	Data type	Required	Description	Format
path	String	Yes		FactSet-root:/document-path. Possible values for FactSet-root are client, personal, super_client, or pa_documents.
parentcomponentid	string	Yes		Existing PA Report ID. Fetched using the Components Endpoint
description	string	Yes		Description of new report

accounts	Array	Yes	List of user's FactSet account paths OR benchmarks.	Account identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every 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. 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.
benchmarks	Array	No	List of user's FactSet account paths OR benchmarks to compare against.	Benchmark identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every benchmark. Possible values for holdings mode are B&H (Buy and Hold), TBR (Transaction based returns) or OMS. Default holdings mode value is B&H.
columns	Array	Yes	List of Columns	Columns can be fetched from the Columns look up. /analytics/engines/pa/v3/columns ..
currencyisocode	String	No		E.g., USD. Currency ISO codes can be fetched using the Currency Lookup.
componentdetail	String	No	Degree of granularity to return in the PA component	Valid values are 'groups', 'totals', and 'security'. Default value is 'security'.
dates	String	No	Date range(s) to run against. Object takes startdate, enddate and frequency.	Supported Date Formats and Frequency Lookup.
datasources	Array	No	List of pricing sources to return the accurate results.	For example, in order to calculate official benchmark returns, use an MSCI pricing source for MSCI benchmarks.
groups	Array	No	List of groups for calculation.	Groups can be fetched from Groups Lookup.

Returns

HTTP status code	Description
200	Expected response, updated a template linked to a PA3 tile.
400	Invalid data provided "Please check the request parameters before attempting again".
401	Missing or invalid authentication.
403	User is forbidden access with current credentials.
404	Template or 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	Request timed out. Retry the request in sometime.

Examples

Request:

PUT https://api.factset.com/analytics/engines/pa/v3/linked-templates/803BDFF5-9DF4-4C24-A755-D5BE2B460689

Headers:

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

Response:

HTTP 200 Expected response, updated a template linked to a PA3 tile

Headers:

x-factset-api-request-key: 6123C9F3697E9DEA

Request Body

```
{
  "data": {
    "parentComponentId":
      "801B800245E468A52AEBEC4BE31CFF5AF82F371DAEF5F158AC2E98C2FA324B46",
    "description": "This is a linked PA template that only returns security level
      data",
    "content": {
      "mandatory": [
        "accounts",
        "benchmarks"
      ],
      "optional": [
        "groups",
        "columns"
      ],
      "locked": [
        "componentdetail"
```

```
        ]
    }
  }
}


Response Body:


{
  "data": {
    "803BDFF5-9DF4-4C24-A755-D5BE2B460689": {
      "description": "This is a linked PA template that only returns security level
       data",
      "name":                          "CLIENT:API_TEMPLATE/803bdff5-9df4-4c24-a755-
       d5be2b460689.PA3_API_TEMPLATE",
      "parentComponentId":
       "801B800245E468A52AEBEC4BE31CFF5AF82F371DAEF5F158AC2E98C2FA324B46"
    }
  }
}
```

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3.2.5 Delete PA Template

DELETE /analytics/engines/pa/v3/linked-templates/{id}

Description

This endpoint deletes an existing PA Template from client-provided id.

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
204	Expected response, deleted the linked PA template successfully.
400	Invalid data provided "Please check the request parameters before attempting again"
401	Missing or invalid authentication
403	User is forbidden access with current credentials.
404	Template 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	Request timed out. Retry the request in sometime.

Examples

Request:
DELETE https://api.factset.com/analytics/engines/pa/v3/linked-templates/803BDFF5-9DF4-4C24-
       A755-D5BE2B460689

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

Response:
HTTP 204 Expected response, deleted the linked PA template successfully.

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

3.3 Templated Component APIs

3.3.1   Create Templated Component

POST /analytics/engines/pa/v3/templated-components

Description

This endpoint creates a new component for UnlinkedPAtemplate or LinkedPAtemplate. The component is used in the PA Engine API.

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

Parameter name	Data type	Required	Description	Format
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.	

Request Query Parameters

Parameter name	Data type	Required	Description	Format
Directory	String	Yes	Where the report is saved.	FactSet-root:/document-path. Possible values for FactSet-root are client, personal, super_client, or pa_documents.
description	String	Yes		Description of new report
parenttemplateid	String	Yes		Existing PA Report ID. Fetched using the Components Endpoint
componentdata	Object	Yes		Parameters for calculated Component.

accounts	Array	Yes	List of user's FactSet account paths OR benchmarks.	Account identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every 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. 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.
benchmarks	Array	No	List of user's FactSet account paths OR benchmarks to compare against.	Benchmark identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every benchmark. Possible values for holdings mode are B&H (Buy and Hold), TBR (Transaction based returns) or OMS. Default holdings mode value is B&H.
columns	Array	No	List of Columns	Columns can be fetched from the Columns look up. /analytics/engines/pa/v3/columns
datasources	Array	No	List of pricing sources to return the accurate results.	For example, in order to calculate official benchmark returns, use an MSCI pricing source for MSCI benchmarks.
currencyisocode	String	No		E.g., USD. Currency ISO codes can be fetched using the Currency Lookup.
componentdetail	String	No	Degree of granularity to return in the PA component	Valid values are 'groups', 'totals', and 'security'. Default value is 'security'.
groups	Array	No	Existing PA Report ID. Fetched using the Components Endpoint	Groups can be fetched from Groups Lookup.

Returns

HTTP status code	Description
201	Expected response, templated PA component created successfully.
400	Invalid data provided "Please check the request parameters before attempting again".
401	Missing or invalid authentication.
403	User is forbidden access with current credentials.
404	Template 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	Request timed out. Retry the request in sometime.

Examples

```
Request:
POST https://api.factset.com/analytics/engines/pa/v3/templated-components/
Headers:
Authorization: Basic RkRTX0RFTU9fVVMt*****************************
Response:
HTTP 201 Expected response, templated PA component created successfully
Headers:
x-datadirect-request-key: 564d5a1d49ffluvj
x-factset-api-request-key: 1gm8zeczlyj3w6bd

Request Body:

{
  "data": {
    "directory": "Personal:TemplatedPAComponents/",
    "parentTemplateId": " B1569BF6-BE1F-4715-85AE-05F71A97C3FF",
    "description": "This is a templated PA component",
    "componentData": {
      "accounts": [
        {
          "id": "SPN:SP50",
          "holdingsmode": "B&H"
        },
        {
          "id": "MSCI_USA:984000",
          "holdingsmode": "B&H"
        }
```

```
      ],
      "benchmarks": [
        {
          "id": "SPN:SP50",
          "holdingsmode": "B&H"
        },
        {
          "id": "DJGX:AMERICAS",
          "holdingsmode": "B&H"
        }
      ],
      "groups": [
        {
          "id": "5BCFFD17598FAEBD88EB4934EFB5FEF53849867D607ECEF232CD42D3369BBBCA"
        }
      ],
      "columns": [
        {
          "id": "BD1720474AB8A80BDD79777F5B9CA594F4151C0554E30F9C916BA73BFAFC1FE0",
          "statistics": [
            "eb9d6d91416e4224bacadc261787e56f"
          ]
        }
      ],
      "currencyisocode": "USD",
      "componentdetail": "GROUPS"
    }
  }
}
```

Response Body:
```
{
  "data": {
    "3dc3aef98490438bba563eeab3434908": {
      "description": "This is a templated PA component",
      "name":
        "Personal:TemplatedPAComponents/3dc3aef98490438bba563eeab3434908.LINKED_TEMPLATED_PA_COMPONENT",
      "parentTemplateId": "B1569BF6-BE1F-4715-85AE-05F71A97C3FF",
      "type": "Linked templated PA component"
    }
  }
}
```

3.3.2   Get Templated Component

GET /analytics/engines/pa/v3/templated-components/{id}

Description

This endpoint fetches existing templated components from the user specified id.

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

Parameter name	Data type	Required	Description	Format
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
201	Expected response, templated PA component created successfully.
400	Invalid data provided "Please check the request parameters before attempting again".
401	Missing or invalid authentication.
403	User is forbidden access with current credentials.
404	Template 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	Request timed out. Retry the request in sometime.

Examples

Request:

GET **https://api.factset.com/analytics/engines/pa/v3/templated-components/{id}**

Headers:

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

Response:

HTTP 200 Expected response, Expected response, templated PA component details.

Headers:

x-datadirect-request-key: 564d5a1d49ffluvj

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

Response Body:

```
    {
  "data": {
    "id": "fb76aea2d1254f34bd22cecb3b56225e",
    "directory": "personal:test/",
    "snapshot": true,
    "componentData": {
      "accounts": [
        {
          "id": "SPN:SP50",
          "holdingsmode": "B&H"
        }
      ],
      "benchmarks": [
        {
          "id": "SPN:SP50",
          "holdingsmode": "B&H"
        }
      ],
      "groups": [
        {
          "id": "5BCFFD17598FAEBD88EB4934EFB5FEF53849867D607ECEF232CD42D3369BBBCA"
        }
      ]
    },
    "description": "This is a templated PA component",
    "name": "personal:test/fb76aea2d1254f34bd22cecb3b56225e.UNLINKED_TEMPALTED_PA_COMPONENT",
    "parentTemplateId": "604970971ef34b4bb478cd7478442657",
    "type": "Unlinked templated PA component"
  }
}
```

3.3.3 Update Templated Component

PUT /analytics/engines/pa/v3/templated-components/{id}

Description

This endpoint allows the user to change the request body and description from an existing templated component from the client-provided id.

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

Parameter name	Data type	Required	Description	Format
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.	

Request Query Parameters

Parameter name	Data type	Required	Description	Format
Path	String	Yes		FactSet-root:/document-path. Possible values for FactSet-root are client, personal, super_client, or pa_documents.
Componentdata	String	Yes		Parameters for calculated Component.
Parenttemplateid	String	Yes		Existing PA Report ID. Fetched using the Components Endpoint
Description	String	Yes		Description of new report

Accounts	Array	Yes	List of user's FactSet account paths OR benchmarks.	Account identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every 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. 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.
Benchmarks	Array	No	List of user's FactSet account paths OR benchmarks to compare against.	Benchmark identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every benchmark. Possible values for holdings mode are B&H (Buy and Hold), TBR (Transaction based returns) or OMS. Default holdings mode value is B&H.
Columns	Array	No	List of Columns	Columns can be fetched from the Columns look up. /analytics/engines/pa/v3/columns .
datasources	Array	No	List of pricing sources to return the accurate results.	For example, in order to calculate official benchmark returns, use an MSCI pricing source for MSCI benchmarks.
Currencyisocode	String	No		E.g., USD. Currency ISO codes can be fetched using the Currency Lookup.
Componentdetail	String	No	Degree of granularity to return in the PA component	Valid values are 'groups', 'totals', and 'security'. Default value is 'security'.
Groups	String	No	Currency ISO code for calculation.	Groups can be fetched from Groups Lookup.

Returns

HTTP status code	Description
200	Expected response.
400	Invalid data provided "Please check the request parameters before attempting again".
401	Missing or invalid authentication.
403	User is forbidden access with current credentials.
404	Component or template 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	Request timed out. Retry the request in sometime.

Examples

Request:

PUT **https://api.factset.com/analytics/engines/pa/v3/templated-components/3dc3aef98490438bba563eeab3434908**

Headers:

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

Response:

HTTP 200 Expected response, updated successfully.

Headers:

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

Request Body:

```
{
  "data": {
    "parentTemplateId": " B1569BF6-BE1F-4715-85AE-05F71A97C3FF",
    "description": "This is a templated PA component",
    "componentData": {
      "accounts": [
        {
          "id": "SPN:SP50",
          "holdingsmode": "B&H"
        },
        {
          "id": "MSCI_USA:984000",
          "holdingsmode": "B&H"
        }
      ],
      "benchmarks": [
        {
          "id": "SPN:SP50",
          "holdingsmode": "B&H"
        },
        {
          "id": "DJGX:AMERICAS",
          "holdingsmode": "B&H"
```

```
        }
      ],
      "groups": [
        {
          "id": "5BCFFD17598FAEBD88EB4934EFB5FEF53849867D607ECEF232CD42D3369BBBCA"
        }
      ],
      "columns": [
        {
          "id": "BD1720474AB8A80BDD79777F5B9CA594F4151C0554E30F9C916BA73BFAFC1FE0",
          "statistics": [
            "eb9d6d91416e4224bacadc261787e56f"
          ]
        }
      ],
      "currencyisocode": "USD",
      "componentdetail": "GROUPS"
    }
  }
}
```

Response Body:
```
{
  "data": {
    "3dc3aef98490438bba563eeab3434908": {
      "description": "This is a templated PA component",
      "name":
       "Personal:TemplatedPAComponents/3dc3aef98490438bba563eeab3434908.LINKED_TEMPLATED_PA_COM
       PONENT",
      "parentTemplateId": "B1569BF6-BE1F-4715-85AE-05F71A97C3FF",
      "type": "Linked templated PA component"
    }
  }
}
```

3.3.4 Delete Templated Component

DELETE /analytics/engines/pa/v3/templated-components/{id}

Description

This endpoint deletes an existing templated component from a client-provided id.

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

Parameter name	Data type	Required	Description	Format
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, deleted the templated PA component successfully.
400	Invalid data provided "Please check the request parameters before attempting again".
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	Request timed out. Retry the request in sometime.

Examples

Request:

DELETE https://api.factset.com/analytics/engines/pa/v3/templated-components/3dc3aef98490438bba563eeab3434908

Headers:

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

Response:

HTTP 204 Expected response, deleted the templated PA component successfully.

Headers:

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

3.4 PA Calculation API

3.4.1   Run PA Calculations

POST /analytics/engines/pa/v3/calculations

Description

This endpoint runs calculations on the PA Engine based on parameters specified in the POST body. Utilize componentid field for calculating Templated Components.

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
componentid	String	Yes	PA component identifier to analyze.	Component ID can be fetched using the Component Lookup.
accounts	Array	Yes	List of user's FactSet account paths OR benchmarks.	Account identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every 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. 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.
benchmarks	Array	No	List of user's FactSet account paths OR benchmarks to compare against.	Benchmark identifiers must have .ACCT or .ACTM extension or BENCH: prefix. Holdings mode can be optionally set for every benchmark. 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	No	Date range(s) to run against. Object takes startdate, enddate and frequency.	Supported Date Formats and Frequency Lookup.
groups	Array	No	List of groups for calculation.	Groups can be fetched from Groups Lookup.
datasources	Array	No	List of pricing sources to return the accurate results.	For example, in order to calculate official benchmark returns, use an MSCI pricing source for MSCI benchmarks.
currencyisocode	String	No	Currency ISO code for calculation.	E.g., USD. Currency ISO codes can be fetched using the Currency Lookup.
componentdetail	String	No	Degree of granularity to return in the PA component	Valid values are 'groups', 'totals', and 'security'. Default value is 'security'.

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.
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
201	Expected response, templated PA component created successfully.
400	Invalid data provided "Please check the request parameters before attempting again".
401	Missing or invalid authentication.
403	User is forbidden access with current credentials.
404	Template not found.
406	Unsupported Accept 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.

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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.

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

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

- Full PA Engine API documentation

- Componentdetail supports securities, groups and totals as well but if we don't pass anything that defaults to securities.

- If we are overriding grouping frequency without overriding the group id it will not be applied to the default groupings saved to the original component.

- If we are overriding the grouping with a frequency, we will be overriding the grouping saved to the original component and also overriding the default frequency of the Beginning of Period to whatever we pass in the request body.

Examples

Request:

POST   https://api.factset.com/analytics/engines/pa/v3/calculations

Headers:

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

Request Body:

```json
{
  "data": {
    "additionalProp1": {
      "componentid": "125872E5D836683A3EB09EF8C73D3E1BE854BE4EF6173BAB4BFBB5752788F4E9",
      "accounts": [
        {
          "id": "BENCH:SP50",
          "holdingsmode": "B&H"
        }
      ],
      "benchmarks": [
        {
          "id": "BENCH:R.1000",
          "holdingsmode": "B&H"
        }
      ],
      "dates": {
        "startdate": "20170101",
        "enddate": "20180101",
        "frequency": "Monthly"
      },
      "groups": [
        {
          "id": "E5DB59F608778844CD784DD5659F65AA8A0A9F63F9E4314B2D92761AF0B1B3D9"
        }
      ],
      "currencyisocode": "USD",
    },

  }
}
```

```
Request Body:
{
  "data": {
    "1": {
      "componentid": "125872E5D836683A3EB09EF8C73D3E1BE854BE4EF6173BAB4BFBB5752788F4E9",
      "accounts": [
        {
          "id": "BENCH:SP50",
          "holdingsmode": "B&H",
        }
      ],
      "dates": {
        "startdate": "20170101",
        "enddate": "20180101",
        "frequency": "Monthly"
      },
      "groups": [
        {
          "id": "E5DB59F608778844CD784DD5659F65AA8A0A9F63F9E4314B2D92761AF0B1B3D9"
        }
      ],
      "benchmarks": [
        {
          "id": "BENCH:R.1000"
        }
      ],
      "currencyisocode": "USD"
    },
"2": {
      "componentid": "125872E5D836683A3EB09EF8C73D3E1BE854BE4EF6173BAB4BFBB5752788F4E9",
      "accounts": [
        {
          "id": "BENCH:SP50"
        }

      ],
      "datasources": {
      "portfoliopricingsources": [
        {
         "id": "D4A1D551BE11F15FDCC54E3F3B3F0B0A053180F4358D580FCDE340AFB1698B07"
        }
      ],
```

```
          "useportfoliopricingsourcesforbenchmark": true
        },
          "groups": [
          {
            "id": "E5DB59F608778844CD784DD5659F65AA8A0A9F63F9E4314B2D92761AF0B1B3D9"
          }
        ],
        "benchmarks": [
          {
            "id": "BENCH:R.1000"
          }
        ],
        "currencyisocode": "USD"
      }
    },
    "meta": {
      "stachContentOrganization": "SimplifiedRow",
      "format": "JsonStach"
    }
}
```

Response:

HTTP 202 Accepted

Headers:

location:
x-datadirect-request-key: zpdo6aebv58fiaoi
x-factset-api-request-key: 6p2d41m4sw1yfh0h

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.

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 and file a ticket using issuetracker.factset.com 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

Request Body	Description
```{ "data": { "1": { "componentid": "125872E5D836683A3EB09EF8C73D3E1BE854BE4EF6173BAB4BFBB5752788F4E9", "accounts": [{ "id": "BENCH:SP50", "holdingsmode": "OMS" }, { "id": "BENCH:KLDLCSN0" }], "benchmarks": [{ "id": "BENCH:R.1000" }], "dates": { "startdate": "20170101", "enddate": "20180101", "frequency": "Monthly" }, "currencyisocode": "USD" } }}```	No. of Calculations: 1

<u>Calculation 1</u>
No. of Accounts: 2
No. of Benchmarks: 1
No. of Points: 2 x 1 = 2

<u>Total</u>
No. of Points: 2 |

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

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```
{
  "data": {
    "1": {
      "componentid":
        "125872E5D836683A3EB09EF8C73D3E1BE854BE4EF6173BAB4BFBB5752788F4E9",        "accounts":
[
        {
          "id": "BENCH:SP50"
        },
        {
          "id": "BENCH:KLDLCSN0"
        },
        {
          "id": "BENCH:R.1000",
          "holdingsmode": "B&H"
        }
      ]
    },
    "2": {
      "componentid":
        "125872E5D836683A3EB09EF8C73D3E1BE854BE4EF6173BAB4BFBB5752788F4E9",
      "accounts": [
        {
          "id": "BENCH:SP50"
        }
      ],
      "benchmarks": [
        {
          "id": "BENCH:R.1000"
        },
        {
          "id": "BENCH:KLDLCSN0"
        }
      ],
      "dates": {
        "startdate": "20180101",
        "enddate": "20180107",
        "frequency": "Daily"
      }
    }
  }
}
```

No. of Calculations: 2

Calculation 1
No. of Accounts: 3
No. of Benchmarks:
1 *(Default – Assuming the PA Document has 1 Benchmark)*
No. of Points: 3 x 1 = 3

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

Total
No. of Points: 3 + 2 = 5