



Workload Optimization Manager 3.6.3 API Guide

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API Guide Revision History

Each new revision of the API Guide includes the following changes. We post a new revision of the API Guide for each major release, if the API undergoes significant change between major releases, or to correct significant errors in the API Guide.

API Guide Version	Changes
8.8.1	Finalize deprecated features. For a list of deprecated features that have been finalized (fully implemented or removed from the API), see Appendix: API Deprecation History (on page 533) . For a list of upcoming deprecations, see Appendix: API Deprecation Contract (on page 531) .
8.8	New revision for the major release, 3.6.0. For a list of fixes and improvements that were incorporated in the API for this release, see Workload Optimization Manager 3.6.0 API Fixes and Improvements (on page 522) . For a list of upcoming deprecations, see Appendix: API Deprecation Contract (on page 531) .
8.7.1	Finalize deprecated features. For a list of deprecated features that have been finalized (fully implemented or removed from the API), see Appendix: API Deprecation History (on page 534) . For a list of upcoming deprecations, see Appendix: API Deprecation Contract (on page 531) .
8.7	New revision for the major release, 3.5.0. For a list of fixes and improvements that were incorporated in the API for this release, see Workload Optimization Manager 3.5.0 API Fixes and Improvements (on page 522) . For a list of upcoming deprecations, see Appendix: API Deprecation Contract (on page 531) .
8.6.1	Finalize deprecated features. For a list of deprecated features that have been finalized (fully implemented or removed from the API), see Appendix: API Deprecation History (on page 534) . For a list of upcoming deprecations, see Appendix: API Deprecation Contract (on page 531) .
8.6	New revision for the major release, 3.4.0. For a list of fixes and improvements that were incorporated in the API for this release, see Workload Optimization Manager 3.4.0 API Fixes and Improvements (on page 523) . For a list of upcoming deprecations, see Appendix: API Deprecation Contract (on page 531) .
8.5.1	Deprecated features were originally with this release. For a list of deprecated features that have been finalized (fully implemented or removed from the API), see Appendix: API Deprecation History (on page 536) .

API Guide Version	Changes
	For a list of upcoming deprecations, see Appendix: API Deprecation Contract (on page 531) .
8.5	<p>New revision for the major release, 3.3.0.</p> <p>For a list of fixes and improvements that were incorporated in the API for this release, see Workload Optimization Manager 3.3.0 API Fixes and Improvements (on page 525).</p> <p>For a list of upcoming deprecations, see Appendix: API Deprecation Contract (on page 531).</p>
8.4.3	<p>Deprecated features that were originally scheduled to be finalized for version 8.4.1 are finalized with this release. For a list of deprecated features that have been finalized (fully implemented or removed from the API), see Appendix: API Deprecation History (on page 537).</p> <p>For a list of upcoming deprecations, see Appendix: API Deprecation Contract (on page 531).</p>
8.4	<p>New revision for the major release, 3.2.0.</p> <p>For a list of fixes and improvements that were incorporated in the API for this release, see Workload Optimization Manager 3.2.0 API Fixes and Improvements (on page 525).</p> <p>For a list of upcoming deprecations, see Appendix: API Deprecation Contract (on page 531).</p>
8.3	<p>New revision for the major release, 3.1.0.</p> <p>For a list of fixes and improvements that were incorporated in the API for this release, see Workload Optimization Manager 3.1.0 API Fixes and Improvements (on page 526).</p> <p>For a list of upcoming deprecations, see Appendix: API Deprecation Contract (on page 531).</p>
8.2.0b	<ul style="list-style-type: none"> ▪ Improved reference materials for the following endpoints: <ul style="list-style-type: none"> – Search – Scenarios – Settings ▪ Updated the reference URL for accessing the Swagger UI to: <pre>https://<Your_Workload_Optimization_Manager_IP>/swagger/external/index.html</pre>



API Reference

This guide will help you to use the Workload Optimization Manager REST API as you script interactions with the Workload Optimization Manager software and develop integrations between Workload Optimization Manager and other software applications.

The REST API exposes Workload Optimization Manager data and processing to remote access via HTTP GET, POST, PUSH, and DELETE methods.

The Workload Optimization Manager user interface is a client to this API, and every feature exposed in the user interface is the product of API calls. To understand the API, you should have a working knowledge of the Workload Optimization Manager user interface, the features it exposes, the data it uses, and the use cases that it supports. In most cases, if you want to script some Workload Optimization Manager behavior, you should be able to execute most of that behavior via the user interface. Stepping through these use cases in that context will help you plan and implement your scripts.

To get the most out of the REST API, you should understand how Workload Optimization Manager organizes its underlying data, and how the various REST resources map to that organization. This introductory section includes discussions of the data that underlies:

- Markets and how they represent your environment (see [Markets \(on page 19\)](#))
- Plans and an overview of how to work with them (see [Plans \(on page 21\)](#))
- Workload placement policies and how they are represented (see [Workload Placement Policies \(on page 24\)](#))
- Reservations for deployment, and how to set them up (see [Reservations \(on page 25\)](#))

NOTE:

This guide is not a comprehensive reference to every possible setting and data payload in the REST API. Many endpoint descriptions include samples of API data objects, but they cannot document every possible combination of inputs. For a complete reference to the API, use this guide in conjunction with the Workload Optimization Manager REST Swagger-UI documentation. For more information, see [Workload Optimization Manager REST API Swagger Documentation \(on page 18\)](#).

Getting Started with the Workload Optimization Manager REST API

The easiest way to see results with the API is to try calls in the Swagger UI. To use the Swagger UI, navigate to:

`https://<Your_Workload_Optimization_Manager_IP>/swagger/external/index.html`

You can use the Swagger UI to navigate to different endpoints and try out their methods. For example, if you navigate to the Users endpoint you can get a listing of all the users that are specified for your Workload Optimization Manager installation. For more information, see [Workload Optimization Manager REST API Swagger Documentation \(on page 18\)](#).

Ultimately, you will want to implement scripts that use the API to get data, execute actions, or integrate Workload Optimization Manager with other processes. As you work with the API, you need to know about:

- Authentication
- URI Structure
- Response Format
- Time in the Workload Optimization Manager API

Authentication

To use the API, you must have a valid user account on the Workload Optimization Manager instance. Also note that accounts can have different roles. The API will only execute commands that are valid for your user role. For example, to execute Workload Optimization Manager recommended actions, your account must have a role of either `administrator`, `deployer`, or `automator`.

To make API calls, you request an authentication token and pass it with each call to the Workload Optimization Manager API. The token request returns a cookie for your authentication. A common way to use this token is to store the cookie locally, and pass it with your API calls.

Example: `curl -s -k -c /tmp/cookies -H 'accept: application/json' 'https://localhost/api/v3/login?hateoas=true' -d 'username=administrator&password=password'`

Then, each request must use the `-b cookie-filename` parameter to use the session cookie delivered by the login request.

Another approach is to get the authentication header and parse out the authentication cookie. Then you can create a header for each API request that includes the cookie. For example, assume you store the value in a variable named `token`. You could use it like this:

```
headers = {'cookie': token}
r = requests.get('https://10.10.123.456/api/v3/targets/specs', headers=headers, verify=False, stream=True)
```

NOTE: For a more complete explanation, see the [Authentication Recipe \(on page 269\)](#) in the API Cookbook.

URI Structure

To use the Workload Optimization Manager REST API, your client will make HTTP requests to specific REST resources. The Workload Optimization Manager REST API supports the standard HTTP methods:

- GET
Get lists of entities or data objects, get individual items.
- POST
Create new objects in the Workload Optimization Manager environment, or specify filters for certain queries.
- PUT
Incrementally modify existing entities or objects.
- DELETE
Delete entities or objects.

The base URI structure for a Workload Optimization Manager REST API resource is:

```
https://<Your_Workload_Optimization_Manager_IP>/api/<API_version>/<resource_name>
```

For example, to list the users in your installation:

<https://111.222.33.44/api/v3/users>

Response Format

The Workload Optimization Manager REST API returns data as JSON objects. Workload Optimization Manager refers to these objects as Data Transfer Objects or DTOs. A DTO is an array of key-value pairs that describe the data you have requested, or the data that is the result of executing a `POST` or `PUT`. For example, if you `GET` the users defined for an installation of Workload Optimization Manager, the API returns a DTO similar to this:

```
[
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/users/_4T_7kwY-Ed-WUKbEYSVIDw"
      }
    ],
    "uuid": "_4T_7kwY-Ed-WUKbEYSVIDw",
    "displayName": "Administrator User",
    "username": "administrator",
    "roleUuid": "_4UAioQY-Ed-WUKbEYSVIDw",
    "roleName": "administrator",
    "loginProvider": "Local",
    "type": "DedicatedCustomer",
    "showSharedUserSC": false
  }
]
```

In this case, the DTO is an array of one object. In other words, there is only one user account defined for this installation of Workload Optimization Manager. The user object begins with a `links` array that gives the URL to this user account. It then follows with properties to describe the given user account.

Note that in most cases to execute a `PUT` or `POST`, you will pass the parameters to create the object via a DTO. These DTOs are similar to the associated response DTOs, but they are not identical. For this example of a user account, the response DTO does not include the user account password, but the DTO to create an account must include the password.

You can try out different REST methods in the Swagger UI to see typical response DTOs.

Time in the Workload Optimization Manager API

The Workload Optimization Manager REST API contains requests that require a start time and/or an end time to create or filter information. Time may be entered in three different formats:

- ISO 8601 Date and Time Format
YYYY-MM-DDTHH:MM:SS. For example, 2018-10-07T12:38:17

- Epoch Time

Epoch Time is represented as the number of seconds that have elapsed since midnight UTC, January 1, 1970. For example, 1514764800 corresponds to January 1, 2018 12:00:00 AM UTC.

- Relative time

Relative time is represented as the time relative to when the call is executed. For example, a start time of `-1w` and an end time of `-1d` indicates that the results should include entries from a week before the call is executed, to the day before the call is executed. Relative units are case-sensitive. Workload Optimization Manager supports the following relative units:

- `m` - minutes
- `h` - hours
- `d` - days

- w – weeks
- M – months
- y – years

Pagination in the Workload Optimization Manager API

Some API calls return very large datasets. Workload Optimization Manager recommends using the pagination features at all times. This is particularly important for larger environments managed by Workload Optimization Manager. Via scopes and filters for individual requests, data may be preliminarily filtered. Using the `limit` and `x-next-cursor` parameters, the data can be returned in manageable chunks.

For example:

```
https://10.10.10.10/api/v3/markets/214075923753936/entities/stats?limit=5&ascending=true
```

The request above is to obtain statistics for all entities in a specific market. `limit=5` indicates that each page of returned data should have 5 results.

The headers in the returned data will now include `x-next-cursor: 5`. In order to retrieve the next page of results, use the cursor in the next request:

```
https://10.10.10.10/api/v3/markets/214075923753936/entities/stats?
cursor=5&limit=5&ascending=true
```

When the final page is reached, the `x-next-cursor` will be empty.

If a request features the `orderBy`, `limit`, or `cursor` parameters, using one of those parameters will return paginated results.

Workload Optimization Manager REST API Swagger Documentation

You can try out different REST methods in the Swagger documentation to see typical response DTOs.

To access the Workload Optimization Manager Swagger documentation, navigate to:

```
https://<Your_Workload_Optimization_Manager_IP>/swagger/external/index.html
```

This documentation uses a standard Swagger-UI application that delivers documentation for all the methods on the different endpoints in the API. This documentation includes a description of the call, a list of parameters to pass, and descriptions of the JSON payloads you POST or PUSH, as well as the payloads you get in the response. If you view the MODEL of a JSON payload, you can navigate the JSON structure to see descriptions of the different object fields.

To access the API, the Swagger-UI requires authentication. If you have already logged into Workload Optimization Manager, your browser session should have a current authentication cookie. The Swagger-UI uses this same cookie for its API authentication.

For each method, the Swagger doc includes a **Try it out** feature where you can set up a call through the Swagger-UI, and then execute it. This generates the following information as a response:

- A curl request for your call
 - The curl commands generated by Swagger may need some modification for use in your environment (for example, escaping quotes or adding the `-k` modifier in order to use HTTP URLs).
- A standard HTTP request for your call
- The server response code
- The response body – The JSON data that the API call returns
- Response headers

NOTE: If you use the SwaggerUI to try out API calls, and the API call returns an error (for example, your call uses incorrect syntax), under some circumstances SwaggerUI does not display the error, and the field for the returned data is empty.

Workload Optimization Manager Markets

Workload Optimization Manager uses market-based analysis to perform workload management. To do this, it constructs a model of your environment, representing each entity as a buyer and seller in a market. You can access this model via a named market resource.

At any time, your Workload Optimization Manager appliance can have a number of markets in memory. To get a list of the current markets in your appliance, execute the following URL:

GET: `/rest/markets`

This listing returns the main real-time market, plus any plan markets that are in memory at the time of the call. Note that you can pass group UUIDs to set a scope for the call. In that case, the call returns only markets for plans that include the passed groups in their scope.

The Real-Time Market

The real-time market performs analysis and workload management on your environment. You can use the real-time market to access entities and get current or historical data about them.

The real-time market `displayName` is `Market`. This market should always be in the `RUNNING` state. Under no circumstances should you use the API to stop this market.

Workload Optimization Manager performs discovery to populate the topology it manages (the collection of entities in the real-time market). For this reason, you should be careful not to delete entities from or add entities to the real-time market.

For the real-time market, you can safely execute `POST`, `PUT`, and `DELETE` calls to:

- Post a query filter to get filtered lists of actions, notifications, and stats for the real-time market
- Post to create placement policies in the real-time market
- Delete to remove placement policies from the real-time market
- Put to edit placement policies on the real-time market
- Post a scenario to the real-time market to run a plan

When you run a plan scenario against the real-time market, Workload Optimization Manager creates a copy of the real-time market, and modifies the copy according to the plan scenario.

NOTE:

It is possible to execute `POST` or `DELETE` methods to modify the topology of the real-time market. However, it is highly unlikely that you would have a reason to do so. You should be aware that changes to the real-time market will affect the analysis Workload Optimization Manager performs. For example, if you remove a VM from the real-time market, Workload Optimization Manager can no longer manage its placement. The VM will still be present in your environment, but it will no longer be managed by Workload Optimization Manager. However, you can't reliably use this technique to make specific entities unavailable to Workload Optimization Manager. For the next discovery pass, Workload Optimization Manager will rediscover the deleted entity, and it will appear in the real-time market again.

Plan Markets

Workload Optimization Manager can have markets other than the real-time market in memory. These other markets represent plans.

A plan market begins as a snapshot of the real-time market. You POST a scenario to the real-time market, and Workload Optimization Manager does two things:

- It makes a copy of the real-time market, to create a plan market. This plan market is just like the real-time market, except for any changes that were declared in the scenario. For example, if the scenario declares a scope for the plan, then the plan market only contains entities that are within that scope.
- It runs economic cycles (buy/sell cycles) against this plan market until there are no more meaningful improvements to be made. At this point the plan run is completed.

Note that once Workload Optimization Manager creates the plan market, that market stays in memory until you delete it. Also note that you can later apply a scenario to the plan market. This is how you run a plan on a plan. The logic flow is the same, and Workload Optimization Manager creates yet another plan market to run the analysis.

Internal-Use Plans

Workload Optimization Manager regularly runs plans to generate data that it displays in the GUI – The Cluster Capacity and Project Cluster Resources dashboards both display data generated by regularly-run plans.

A plan market that is for internal use includes the substring `_BasePlan` in the `displayName`. You should not modify these plan markets for any reason.

User-Created Plans

Users can create plans to run what-if scenarios in the environment, and the results are saved as a plan market. At any time, each user account can have multiple plan markets loaded in the Workload Optimization Manager instance.

You identify planner markets by their names. A plan name is specified as `<PlanType><userName>_<arbitraryID>`.

For example, a valid plan name is `CLOUD_MIGRATION_cud_1493140514716`. To find out which user owns this plan, you can parse out the user's name and query the API for that user's account information.

When you get a plan market, the response includes information such as:

- `uuid`: The market's identifier.
- `state`: Whether the plan succeeded or not. The state can be one of:
 - `CREATED`
 - `READY_TO_START`
 - `RUNNING`
 - `COPYING`
 - `SUCCEEDED`
 - `STOPPING`
 - `STOPPED`
 - `USER_STOPPED`
 - `DELETING`

As long as a plan market is running, Workload Optimization Manager is still calculating the plan results. If the market is stopped, then the plan has been run and you can access data from this market to see the plan results. You can make a PUT call to the market to stop a plan that is running.

For a plan market, you can execute the same POST, PUT, and DELETE methods that you would execute on the real-time market. These include:

- POST a query filter to get filtered lists of actions, notifications, and stats for the plan market
- POST to create placement policies in the plan market
- DELETE to remove placement policies from the plan market
- PUT to edit placement policies on the plan market
- POST a scenario to the plan market to run a plan on plan

You can also safely execute the following methods on a plan market:

- DELETE a plan market
- PUT to save or stop a plan market

NOTE:

It's possible to stop a plan market through the GUI or the API. Also, a plan may have been stopped before it finished its calculations. In this case, the plan results will be incomplete.

Running Plans

A plan is a simulation or what-if scenario that explores the results of possible changes to your environment. To run a plan, Workload Optimization Manager creates a snapshot copy of your real-time market and applies changes to it. It then uses the Economic Scheduling Engine to perform analysis on that plan market.

Before working with plans in the API, you should be familiar with plans via the GUI. You should know what plans can accomplish, and how to specify the plan settings such as:

- Plan scope
- Changes to workload in the environment (adding or removing VMs)
- Changes to supply (adding, removing, or reconfiguring hardware)
- Changes to placement (migrating to the cloud or a different cluster)
- Changes to constraints

To create a plan, you first specify a plan scenario. This is an object that contains all the plan settings. The scenario object contains an array of changes, and each change declares a setting that you want to make.

After you create a scenario, you POST it to a market. In most cases you will post it to the real-time market. When you post the scenario to the market, Workload Optimization Manager does two things:

- It makes a copy of the market, to create a plan market. This plan market is just like the original market, except for any changes that were declared in the scenario. For example, if the scenario declares a scope for the plan, then the plan market only contains entities that are within that scope.
- It runs economic cycles (buy/sell cycles) against this plan market until there are no more meaningful improvements to be made. At this point the plan run is completed.

Saving and Deleting Plan Markets

As you run a plan, Workload Optimization Manager performs analysis and shows the results. It also serializes and saves the plan results so users can load the results into the GUI at a later time.

NOTE:

Updates to Workload Optimization Manager can change the data format for the saved plan results. In that event, then the results will be inconsistent. After each update to Workload Optimization Manager, you should regenerate all the plans you want to save, and save them again.

To delete a plan via the API, just execute a DELETE method on the plan market.

Creating Scenarios

The first step for a plan is to create the scenario. Note that a scenario is entirely separate from the plan. You create a scenario and then POST it to a market to create the plan. But the scenario still exists in memory, and you can apply it to a different market if you wish. For example, you can apply the same scenario to the real-time market at different times.

To create a scenario, use the POST: `/rest/scenarios/{name}` method. This method takes three parameters:

- `scope`
An array of group UUIDs. For a scope of multiple groups, you must specify groups of the same type.
- `projection_days`
For a projection scenario, the days to mark each projection period
- `input`
A ScenarioApilInputDTO that can specify all the settings for a scenario.

The `input` parameter, a ScenarioApilInputDTO, is an object that you can POST to the API to specify scenario settings. The API includes methods to create and delete scenarios. In most cases, you will create a scenario by POSTing or PUTing a ScenarioApilInputDTO with changes to declare the scenario settings you want. Note that the API includes methods you can use to PUT many of these settings into a specific scenario by passing properties directly in the URL. However, you can also make these settings with the ScenarioApilInputDTO. Learning to use this DTO is the most consistent way to create and modify a scenario.

Note that as you create a scenario you can POST all of its settings in the ScenarioApilInputDTO, or you can create an incomplete scenario, and then PUT other changes into the scenario at a different time.

Creating a Projection Scenario

Projection plans calculate infrastructure requirements into the future, so your environment can accommodate changes to workload requirements over time. In a single plan you can specify the scope of the plan, how far into the future to project, and by what increments of time. For example, you can project the requirements of a specific datacenter one year into the future, showing how requirements change at one-month intervals.

When you create a projection scenario via the API, you provide the projection periods as an array of the days from today that you want to project. For example, 0 for today, 30 for 30 days from today, 60 for 60 days from today, and so on.

To create a scenario for a projection plan:

- **Scope the scenario**
A projection plan requires a scope to the scenario.
- **Create a change in the plan of type `PROJECTION_PERIODS`**
This change identifies the plan periods that you want, as an array of days.

```
{
  "changes": [
    {
      "type": "PROJECTION_PERIODS",
      "projectionDays": [0, 30, 60, 90]
    }
  ]
}
```

- For any plan changes that you want to repeat on specific projection periods, specify a `projectionDays` array for that change. Note that the items in this array must match the `projectionDays` that you specified for the `PROJECTION_PERIODS` change.

For example, assume you specified `"projectionDays": [0, 30, 60, 90]` for the initial projection:

- Valid: `"projectionDays": [0, 30, 60, 90]`
- Valid: `"projectionDays": [30, 90]`
- Not valid: `"projectionDays": [0, 35, 70, 90]`

This listing shows a plan scenario that scopes the plan market, sets up a projection for four periods, and adds one VM to the inventory for two out of four projection periods:

```
{
  "displayName": "My Projection",
  "changes": [
    {
      "type": "SCOPE",
      "scope": [
        {
          "uuid": "5678a46e9716657be88b5e1217df91436e13e4ff",
          "className": "Group",
          "entitiesCount": 2,
          "groupType": "VirtualMachine",
        }
      ]
    },
    {
      "type": "PROJECTION_PERIODS",
      "projectionDays": [
        0,
        30,
        60,
        90
      ]
    },
    {
      "type": "ADDED",
      "targets": [
        {
          "uuid": "564d89f4-190b-de1b-cb28-3e2f2126ab48"
        }
      ],
      "value": "1",
      "projectionDays": [
        30
      ]
    }
  ]
}
```

Placement Policies in Plans

You can enable or disable placement policies in a plan. This is useful to see how the environment would change if you had a different set of constraints. It's important to note that a placement policy exists in the context of a market. To get a placement policy, query the market that contains it. To create a placement policy for a plan, you will create the pool policy and add it to the plan market.

If you want to enable or disable a placement policy in a plan, you specify that as a change in the scenario. Because the placement policy exists in a market, you have to know which market you will run the plan against, and get the policy from that market.

For example, if you will run the plan against the real-time market, you would:

- Query the real-time market for the policy you want
- Give that policy's UUID in the scenario change object
- In the scenario change object – Specify to enable or disable the policy
- When the scenario is complete, POST the scenario to the real-time market

Remember that when you run a plan, Workload Optimization Manager creates a new plan market. This plan market will contain a copy of the placement policy, and will enable or disable it, depending on your setting.

Workload Placement Policies

Workload Placement Policies affect how Workload Optimization Manager calculates placement for the workloads in your environment. Policies can enforce specific business rules to constrain placement, and they can remove boundaries to enable placement calculations across cluster or datacenter boundaries.

A placement policy exists in the context of a market – Either the real-time market or a plan market. Each market has its own set of placement policies. Even if a plan market is an exact copy of the real-time market, the plan market has its own placement policies, each with its own UUID.

Before you work with placement policies via the API, you should understand how they work in the user interface. You should understand the types of placement policies you can create, and the effect of each on market analysis.

The API supports the following types of policies:

- **AT_MOST_N**: Only the given number of consumers can run on a single member of the providers group. This is set in the `capacity` property of the policy object.
- **BIND_TO_GROUP**: The consumers can only run on members of the provider group.
- **BIND_TO_COMPLEMENTARY_GROUP**: The consumers cannot run on any members of the provider group.
- **MUST_RUN_TOGETHER**: These consumers must run on the same provider entity.
- **AT_MOST_N_BOUND**: Only the given number of consumers can run on a single member of the providers group, AND The consumers can only run on members of the provider group.
- **MERGE**: Remove cluster boundaries for the specified clusters.
- **BIND_TO_GROUP_AND_LICENSE**: Create a license group.

When you get a policy, the returned object describes the policy type, as well as the consumer and provider groups. When you create a policy, you do not have to provide the full data. You provide:

- `buyerUuid`: The group of consumers for this policy.
- `sellerUuid`: The provider group for this policy.
- `type`: The policy type.
- `policyName`: A display name for this policy.
- `enabled`: Whether to enable the policy in the market. Can be `true` or `false`.
- `capacity`: For an **AT_MOST_N** or **AT_MOST_N_BOUND** policy, the number of consumers to allow on a provider entity.
- `mergeType`: For a **MERGE** policy, the type of clusters to merge. Can be one of `Cluster`, `StorageCluster`, `DesktopPools`, or `DataCenter`.
- `mergeUuids`: The groups that you want to merge. The group type must match the `mergeType`.

For example, to create a DON'T PLACE policy, post the following inputDto to the market:

```
{
  "buyerUuid": "f82dbbc2b3366052f3bc1ac8a68c9c06b0eb182a",
  "enabled": false,
  "policyName": "PolicyFromApi",
  "sellerUuid": "4a2f5f132ae690af147ccfd6ea9839e79da3db79",
}
```



```
"type": "BIND_TO_COMPLEMENTARY_GROUP"
}
```

To edit a placement policy, PUT an input Dto to the given policy. Specify the changes you want in the input Dto.

Calculating Reservations and Workload Placement

Workload Optimization Manager includes the capability to reserve resources for VMs you plan to deploy in the future. Workload Optimization Manager calculates optimal placement for these VMs and then reserves the host and storage resources that they need.

To reserve VMs, you will choose a VM template, specify any placement constraints, set how many instances to reserve, and then indicate whether to reserve now or in the future. Because reserved VMs do not yet exist, they do not participate in the real-time market. VM templates specify the resource requirements for each reserved VM, including:

- Compute and storage resources allocated to each VM
- Consumed factor. This is the percentage of allocated CPU, memory, or storage that the reserved VM will utilize.

Note that before using the API to work with reservations, you should understand how reservations work from the user interface.

With the API, you can perform the following:

- Get list of reservations
- See the current placement for the reservation workloads
- Create reservations
- Delete a current reservation

Getting Reservation Information

To get a list of current reservations, execute `/rest/reservations`. This returns a list of all active reservations. If you know the UUID of the reservation you want, you can pass it to get data for just that reservation.

Each reservation object includes:

- Display name
- Status – can be:
 - DEPLOYING – Workload Optimization Manager is deploying the workload
 - DEPLOY_SUCCEEDED – The workload was successfully deployed
 - IN_PROGRESS – Placement calculation is in progress
 - PLACEMENT_SUCCEEDED – For a new reservation, the environment has sufficient resources to place the workload; if you specified a reserve date, this will be an active reservation
 - PLACEMENT_FAILED – For a newly created reservation, the environment doesn't have resources to place the workload; if you specified a reserve date, this will be an unfulfilled reservation
 - RETRYING – Workload Optimization Manager is trying to place the workload of an unfulfilled reservation
- Time the reservation was created, time to deploy, and time it will expire
- A description of the reserved workload
- The deployment profile that identifies the physical files that will be copied to deploy the workload, as well as optional placement limitations.
- Statistics for the compute and storage resources the reservation sets aside

For example, this listing shows a reservation for one VM:

```

{
  "uuid": "_kWZHIDDmEeePgeXuo0RRbw",
  "displayName": "MyReservation",
  "count": 1,
  "status": "PLACEMENT_SUCCEEDED",
  "reserveDateTime": "Thu May 04 16:27:29 UTC 2017",
  "expireDateTime": "Thu Aug 31 16:27:29 UTC 2017",
  "deployDateTime": "Thu Aug 31 16:27:29 UTC 2017",
  "reserveCount": 1,
  "demandEntities": [
    {
      "uuid": "_kWGb7TDmEeePgeXuo0RRbw",
      "displayName": "MyReservation_C0",
      "className": "VirtualMachine",
      "template": {
        "uuid": "T423f548d-cadc-e525-6df4-1f90724cf696",
        "displayName": "vsphere-dc3.dev.mycorp.com::TMP-SUSE64",
        "className": "VirtualMachineProfile"
      },
      "deploymentProfile": {
        "uuid": "_gHJ0ICXxEeePgeXuo0RRbw",
        "displayName": "DEP-SUSE64",
        "className": "ServiceCatalogItem"
      },
      "placements": {
        "computeResources": [
          {
            "stats": [
              {
                "name": "numOfCpu",
                "value": 1
              },
              {
                "name": "cpuSpeed",
                "value": 2603
              },
              {
                "name": "cpuConsumedFactor",
                "value": 0.5
              },
              {
                "name": "memorySize",
                "value": 2097152
              },
              {
                "name": "memoryConsumedFactor",
                "value": 0.75
              },
              {
                "name": "ioThroughput",
                "value": 0
              },
              {
                "name": "networkThroughput",
                "value": 0
              }
            ],
            "provider": {
              "uuid": "Virtual_ESX_42381da5-12fa-1e82-2f1c-887419380d43",
              "displayName": "hp-esx21.corp.vmturbo.com",
              "className": "PhysicalMachine"
            }
          }
        ],
        "storageResources": [

```

```

    {
      "stats": [
        {
          "name": "diskSize",
          "value": 18432.363
        },
        {
          "name": "diskIops",
          "value": 0
        }
      ],
      "provider": {
        "uuid": "10545c15-7687ef26",
        "displayName": "QS2:ESXDC3DS1",
        "className": "Storage"
      }
    }
  ]
}

```

Creating a Reservation

To create a reservation, you POST an input DTO that defines the reservation's:

- **action:** The action type: RESERVATION
- **demandName:** The display name of the reservation – If you do not specify names for the added workloads, this will be the root name for new VMs
- **placementParameters:**
 - **constraintIDs:** An array of UUIDs for placement policies that will affect the calculated placement
 - **count:** The number of workloads to place
 - **entityNames:** An array of names for the placed VMs – The array length should equal **count**
 - **geographicRedundancy:** If **true** place the workloads on unique hosts, otherwise Workload Optimization Manager can place multiple workloads on the same host
 - **templateID:** The UUID of the template that you will use to place this workload – Note that the template must include a reference to the deployment profile that you specify in **deploymentParameters**
- **expireDateTime:** When to cancel a reservation if Workload Optimization Manager cannot place all the workloads by that date – for a RESERVATION action, Workload Optimization Manager automatically sets the deploy time to equal this time
- **reserveDateTime:** The time to calculate the workload placement and create the reservation – This time cannot be earlier than the time that you POST the reservation to the API

The following listing shows an input DTO that creates a reservation. It will place four workloads, and it gives specific names to each one.

```

{
  "action": "RESERVATION",
  "demandName": "MyReservation",
  "expireDateTime": "2017-10-10T12:38:17+00:00",
  "parameters": [
    {
      "deploymentParameters": {
        "deploymentProfileID": "_c9CJMDDAEeePgeXuo0RRbw"
      },
      "placementParameters": {
        "geographicRedundancy": false,
        "count": 4,

```

```

    "entityNames": [
      "foo", "bar", "baz", "bonk"
    ],
    "templateID": "_UKsnkJkSEeChcOXEhzJExA"
  }
},
"reserveDateTime": "2017-05-04T18:22:12+00:00"
}

```

Async Placement Calculation

When you POST a reservation, Workload Optimization Manager runs a plan to calculate the optimal placement of the workloads. Depending on the size of the reservation, this can take a significant amount of time. The API calculates the placement asynchronously. If your script relies on the reservation, you should verify that the reservation has completed before moving on.

When you execute a reservation, the response to your POST shows that the calculation is in progress:

```

{
  "uuid": "_0dPrYTDlEeePgeXuo0RRbw",
  "displayName": "MyReservation",
  "count": 4,
  "status": "IN_PROGRESS",
  "reserveDateTime": "Thu May 04 18:22:12 UTC 2017",
  "expireDateTime": "Tue Oct 10 12:38:17 UTC 2017"
}

```

To examine the placement results, GET the reservation using the UUID that the API gives in the response.

Using Templates

To create a reservation you specify a template that contains workload requirements. VM Templates specify the resources that will be available to the VM, including:

- VCPUs
- Virtual Memory
- Storage
- Network Throughput
- IOPS
- IO Throughput

Note that templates can be created by users, and Workload Optimization Manager also discovers templates that are created by the management services in your environment. For example, a hypervisor or a cloud service provider typically manages a number of its own templates – Workload Optimization Manager discovers these. You should never edit a discovered template.

To see whether a template is discovered, GET the template you're interested in and look for the `discovered` property. This will be `true` or `false`.



Workload Optimization Manager REST API Endpoints

The REST API resources give you full access to the Workload Optimization Manager software. This is a complete API that exposes the full set of Workload Optimization Manager capabilities. In fact, the product user interface is implemented as a Workload Optimization Manager client that uses this API.

While the REST API resources are documented in the SwaggerUI, this section provides extra details for the more expressive resources in the API.

To access the Workload Optimization Manager REST SwaggerUI, open a web browser to:

`https://<Your_Workload_Optimization_Manager_IP>/swagger/external/index.html`

Utility Requests

In the Workload Optimization Manager API Guide, utility requests are the requests within an endpoint that do not return information about your environment, but provide benefits to other calls you may make. For example, `https://10.10.10.10/api/v3/settings/` is a utility request that returns a list of all possible settings managers. This information can be used to find settings on your instance, but the `/settings/` request itself does not provide any instance-specific information.

Actions Endpoint

Instead of responding to thresholds, Workload Optimization Manager analyzes the operating conditions and constantly recommends actions to keep the entire environment within the desired state. If you execute these actions (or let Workload Optimization Manager execute them for you), the environment will maintain operating conditions that assure performance while also ensuring the lowest possible cost thanks to efficient utilization of your resources.

Using the actions endpoint, you can:

- Get a complete or filtered list of actions in your environment
- Accept or reject actions
- Get statistics related to a specified action
- Get notifications related to a specified action

Actions Utility Requests

Utility requests provide metadata that you can use to make related requests, assemble input DTOs, or see the potential values of a particular DTO.

Getting the Valid `actionMode` parameters for a Specified Entity and Action

The actions endpoint contains a utility request that shows the possible values for the `actionMode` parameter for a specified entity and action type. These can be used to set or understand the possibilities for various action settings.

To specify an entity/action type, this request takes the following parameters:

<p><code>action_type</code></p>	<ul style="list-style-type: none"> ▪ START: Start an entity, and add it to the Workload Optimization Manager market. ▪ MOVE: Move an entity from one provider to another. For example, moving a VM between hosts, or a datastore between disk arrays. ▪ SUSPEND: Suspend the entity to exclude its capacity from your environment. Suspend does not remove the entity from your environment, but the market does not include the entity in its analysis. Based on market conditions, analysis can recommend restarting suspended entities, which includes them in market analysis once again. ▪ ADD_PROVIDER: This is equivalent to the <code>START</code> action, but for storage entities. ▪ CHANGE: Move a virtual machine's storage between datastores. ▪ PROVISION: Add capacity to your environment. ▪ RECONFIGURE: Analysis recommends this when a VM is not able to correct a misconfiguration via another type of action. For example, analysis can recommend a <code>RECONFIGURE</code> action when a placement policy requires a VM to move to a host on a particular cluster, but cross-cluster moves are not permitted. ▪ DELETE: This is equivalent to the <code>SUSPEND</code> action, but for storage entities. ▪ RESERVE_ON_PM: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular host. ▪ RESERVE_ON_DS: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular datastore. ▪ RESIZE_FOR_EFFICIENCY: A resize that reduces the capacity of a commodity, such as vCPU, or vMEM. ▪ RESIZE_FOR_PERFORMANCE: A resize that increases the capacity of a commodity, such as vCPU, or vMEM.
<p><code>entity_type</code></p>	<ul style="list-style-type: none"> ▪ <code>APPLICATION</code> ▪ <code>APPLICATION_SERVER</code>

- BUSINESS_ACCOUNT
- BUSINESS_UNIT
- CHASSIS
- CLOUD_SERVICE
- CONTAINER
- CONTAINER_POD
- DATABASE
- DATABASE_SERVER
- DATACENTER
- DISK_ARRAY
- DPOD
- IO_MODULE
- LOAD_BALANCER
- LOGICAL_POOL
- NETWORK
- PHYSICAL_MACHINE
- STORAGE
- STORAGE_CONTROLLER
- SWITCH
- VIRTUAL_APPLICATION
- VIRTUAL_DATACENTER
- VIRTUAL_MACHINE
- VPOD

Example: GET `https://10.10.10.10/api/v3/actions/availablemodes?action_type=PROVISION&entity_type=PhysicalMachine`

Response: An array of strings, where each string is a valid actionMode for the combination provided. In this example, a PROVISION action and the PhysicalMachine entity. An empty response body indicates that the requested entity does not have an action of that type, usually for practical reasons. For example, the Network entity cannot have a MOVE action.

```
[
  "RECOMMEND",
  "DISABLED",
  "MANUAL",
  "AUTOMATIC"
]
```

Getting a List of Entry Points for Actions

The actions endpoint contains a utility request that shows the entry points for other action-related requests. These can be used to find the UUID and details relating to a specific action.

Example: GET `https://10.10.10.10/api/v3/actions`

Response: An array of LinkApiDTO objects, where each object contains a URL to get all actions for a specified market, entity, or group.

```
{
  "links": [
    {
      "rel": "Market actions",
      "href": "https://10.10.10.10/api/v3/markets/{uuid}/actions?ascending=true"
    },
    {
      "rel": "Entity actions",
      "href": "https://10.10.10.10/api/v3/entities/{uuid}/actions?ascending=false"
    },
    {
      "rel": "Group actions",
      "href": "https://10.10.10.10/api/v3/groups/{uuid}/actions?ascending=true"
    }
  ]
}
```

Actions Requests

Action requests handle acceptance, rejection, filtering, and exploration of actions on your Workload Optimization Manager appliance.

If one or more of the entities in the scope of your request no longer exists in the topology, the ActionApiDTO for such entities will contain minimal information about the entities.

Getting a Specified Action

Gets the action details, including the creation time and target entity information, for a specified action UUID.

Example: GET https://10.10.10.10/api/v3/actions/_6QsKkaNWEeiYWYj--U8W5g/details

Response: The full ActionApiDTO for the requested action:

```
{
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/actions/_6QsKkaNWEeiYWYj--U8W5g"
    },
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/actions/2218532354592"
    }
  ],
  "uuid": "_6QsKkaNWEeiYWYj--U8W5g",
  "createTime": "2018-08-19T07:40:57-04:00",
  "actionType": "MOVE",
  "actionState": "PENDING_ACCEPT",
  "actionMode": "MANUAL",
  "details": "Move VirtualMachine Jboss-EAP-10.203 from dc17-host-01.mycorp.com to dc17-host-02.mycorp.com",
  "importance": 7.4150376,
  "target": {
    "uuid": "421d8db4-3fc6-440b-0575-11383c020c6c",
    "displayName": "Jboss-EAP-10.203",
    "className": "VirtualMachine",
    "aspects": {
      "virtualMachineAspect": {
        "os": "CentOS 4/5/6/7 (64-bit)",

```



```

    "connectedNetworks": [
      {
        "uuid": "34f9f5364cd843aalfe99900621ee3b51a7dc6e5",
        "displayName": "VM Network"
      }
    ],
    "numVCPUs": 2,
    "ebsOptimized": false
  },
  "environmentType": "ONPREM"
},
"currentEntity": {
  "uuid": "34313836-3333-5553-4537-33364e385146",
  "displayName": "dc17-host-01.mycorp.com",
  "className": "PhysicalMachine",
  "environmentType": "ONPREM"
},
"newEntity": {
  "uuid": "34313836-3333-5553-4537-33394e43424e",
  "displayName": "dc17-host-02.mycorp.com",
  "className": "PhysicalMachine",
  "environmentType": "ONPREM"
},
"risk": {
  "uuid": "_CizZoKN2EeiYWYj--U8W5g",
  "subCategory": "Efficiency Improvement",
  "description": "dc17-host-01.mycorp.com can be suspended for efficiency",
  "severity": "MINOR",
  "importance": 0
},
"actionID": 2218532354592
}

```

Getting a Filtered List of Actions

Gets a list of actions, given a scope UUID and filtered by an ActionApiInputDTO using one or more of the following criteria:

Criteria	Description
actionModelList	<ul style="list-style-type: none"> ▪ DISABLED: Do not recommend or perform the action. When you disable an action, the user interface will no longer display actions of that type. ▪ RECOMMENDED: Recommend the action so a user can execute it via the given hypervisor or by other external means ▪ MANUAL: Recommend the action, and provide the option to execute that action through the Workload Optimization Manager user interface or an /actions API request. ▪ AUTOMATED: You have directed Workload Optimization Manager to execute the action automatically.

Criteria	Description
	<ul style="list-style-type: none"> ▪ COLLECTION (UNUSED): Legacy action mode, no longer used.
actionStateList	<ul style="list-style-type: none"> ▪ DISABLED: An action whose policy has been disabled. ▪ RECOMMEND: An action that cannot be automated due to policy settings or must be executed outside the system, such as the purchase of hardware. ▪ PENDING_ACCEPT: When the action mode is set to manual, a recommended action that has not been accepted or cleared. ▪ ACCEPTED: An action that has been accepted, but is not yet in progress. ▪ IN_PROGRESS: An action that is being executed. ▪ SUCCEEDED: An action that was accepted and completed successfully. ▪ FAILED: An action that was accepted and did not complete successfully. ▪ REJECTED: When the action mode is set to manual, an action that has been rejected by the user. ▪ CLEARED: When the action mode is set to manual, an action that is no longer recommended by the market. ▪ ACCOUNTING: For cloud entities, an action to resize in order to use a different instance template. ▪ QUEUED: When more than 10 actions are to be executed for a single target, Workload Optimization Manager will place the 11th and all subsequent actions into a QUEUED state, and they will execute as the previous actions complete.
actionTypeList	<ul style="list-style-type: none"> ▪ START: Start an entity, and add it to the Workload Optimization Manager market. ▪ MOVE: Move an entity from one provider to another. For example, moving a VM between hosts, or a datastore between disk arrays. ▪ SUSPEND: Suspend the entity to exclude its capacity from your environment. Suspend does not remove the entity from your environment, but the market does not include the entity in its analysis. Based on market conditions, analysis can recommend restarting suspended entities, which includes them in market analysis once again. ▪ ADD_PROVIDER:

Criteria	Description
	<p>This is equivalent to the <code>START</code> action, but for storage entities.</p> <ul style="list-style-type: none"> ▪ <code>CHANGE</code>: Move a virtual machine's storage between datastores. ▪ <code>PROVISION</code>: Add capacity to your environment. ▪ <code>RECONFIGURE</code>: Analysis recommends this when a VM is not able to correct a misconfiguration via another type of action. For example, analysis can recommend a <code>RECONFIGURE</code> action when a placement policy requires a VM to move to a host on a particular cluster, but cross-cluster moves are not permitted. ▪ <code>DELETE</code>: This is equivalent to the <code>SUSPEND</code> action, but for storage entities. ▪ <code>RESERVE_ON_PM</code>: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular host. ▪ <code>RESERVE_ON_DS</code>: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular datastore. ▪ <code>RESIZE_FOR_EFFICIENCY</code>: A resize that reduces the capacity of a commodity, such as vCPU, or vMEM. ▪ <code>RESIZE_FOR_PERFORMANCE</code>: A resize that increases the capacity of a commodity, such as vCPU, or vMEM.
<code>cleared</code>	<p>Default: <code>false</code>.</p> <p>When <code>true</code>, actions that were removed from the action list before being executed will be returned.</p>
<code>costType</code>	<ul style="list-style-type: none"> ▪ <code>Saving</code> An action that will decrease cloud spending. ▪ <code>Investment</code> An action that will increase cloud spending.
<code>cumulative</code>	<p>Default: <code>false</code>.</p> <p>When <code>true</code>, shows the savings for each action in a scope as a cumulative total, rather than showing the savings for individual actions.</p>
<code>environmentType</code>	<ul style="list-style-type: none"> ▪ <code>ONPREM</code>: Returns only actions related to entities that are part of your on-premises environment. ▪ <code>CLOUD</code>: Returns only actions related to entities that are part of your cloud environment.
<code>groupBy</code>	<p>You may group the actions returned by the following criteria: [<code>actionModes</code>, <code>actionStates</code>, <code>actionTypes</code>, <code>risk</code>, <code>riskSeverity</code>, <code>riskSubCategory</code>]</p>

Criteria	Description
hasReservedInstance	Default: false. When true, only actions that are related to reserved instances will be returned.
relatedEntityTypes	Returns only actions related to entities of these types within the scope. For example, if your scope is a virtual datacenter and you specify VirtualMachine as a related entity type, the request will include only those actions related to VMs in the specified virtual datacenter. Choose from the following entity types: [Datacenter, PhysicalMachine, VirtualMachine, Storage, Application, Chassis, DiskArray, IOModule, StorageControl, Switch, VirtualDataCenter, VPod, DPod, Container, Database, DatabaseServerContainer, Logical-Pool]
riskSeverityList	Returns only actions of the given severities: [Unknown, Normal, Minor, Major, Critical]
riskSubCategoryList	returns only actions of the given subcategories: [Performance Assurance, Efficiency Improvement, Prevention, Compliance]

The following commodities may be returned as the related commodity for an action:

- Access
- ActionPermit
- ActiveSessions
- ApplicationCommodity
- Ballooning
- Biclique
- BufferCommodity
- BurstBalance
- CPU
- CPUAllocation
- CPUProvisioned
- ClusterCommodity
- CollectionTime
- Connection
- Cooling
- Coupon
- CrossCloudMoveSvc
- CrossClusterMoveSvc
- DBCacheHitRate
- DBMem
- DISK_ARRAY_ACCESS
- DSPMAccessCommodity
- DataCenterCommodity
- DatastoreCommodity
- DrsSegmentationCommodity
- Extent
- Flow
- FlowAllocation

- HACommodity
- HOST_LUN_ACCESS
- Heap
- HotStorage
- IOThroughput
- ImageCPU
- ImageMem
- ImageStorage
- InstanceDiskSize
- InstanceDiskType
- LICENSE_ACCESS
- LicenseCommodity
- Mem
- MemAllocation
- MemProvisioned
- Move
- NetThroughput
- NetworkCommodity
- NetworkInterfaceCount
- NetworkPolicy
- NumDisk
- NumberConsumers
- NumberConsumersPM
- NumberConsumersStorage
- PORT_CHANNEL
- PoolCPU
- PoolMem
- PoolStorage
- Power
- ProcessingUnits
- Q1VCPU
- Q2VCPU
- Q3VCPU
- Q4VCPU
- Q5VCPU
- Q6VCPU
- Q7VCPU
- Q8VCPU
- Q16VCPU
- Q32VCPU
- Q64VCPU
- QNVCPU
- ResponseTime
- RightSizeDown
- RightSizeSVC
- RightSizeUp
- SLACommodity
- SameClusterMoveSvc
- SegmentationCommodity
- ServiceLevelCluster

- SoftwareLicenseCommodity
- Space
- Storage
- StorageAccess
- StorageAllocation
- StorageAmount
- StorageClusterCommodity
- StorageLatency
- StorageProvisioned
- Swapping
- TemplateAccess
- TenancyAccess
- Threads
- Transaction
- TransactionLog
- Unknown
- VAppAccess
- VCPU
- VCPULimitQuota
- VCPURequest
- VCPURequestQuota
- VDCCommodity
- VMPMAccessCommodity
- VMem
- VMemLimitQuota
- VMemRequest
- VMemRequestQuota
- VStorage
- Zone

Example: POST <https://10.10.10.10/api/v3/actions>

Example input: In this example, a list of actions that meet the following criteria will be returned and grouped by the `actionMode` of the action:

- Is in state `PENDING_ACCEPT`
- Is part of an on-premises environment
- Is an action for a virtual machine
- Is an action generated by the Workload Optimization Manager real-time market

```
{
  "actionInput": {
    "actionStateList": [
      "PENDING_ACCEPT"
    ],
    "environmentType": "ONPREM",
    "groupBy": [
      "actionModes"
    ]
  },
  "relatedType": "VirtualMachine",
  "scopes": [
    "Market"
  ]
}
```

```
}

```

Response: A list of `ActionApiDTOs` that meet the specified criteria.

Accepting or Rejecting a Specified Action

This request accepts or rejects an action with the specified UUID, and takes the following parameters:

Parameter	Description
action_UUID (Required)	The UUID of the action.
accept (Required)	When <code>true</code> , accepts the action. When <code>false</code> , rejects the action.

Example: POST `https://10.10.10.10/api/v3/actions/_QJcZNd3JEij-LI4LMERow?accept=false`

Response: `true`, if the action was accepted.

Actions Endpoint Tips

GroupBy Field Criteria

When using the POST requests to query actions and action statistics, there is a `groupBy` parameter that you may use to group statistics. The valid values for this parameter differ by entity type. Here is the complete list of valid options per entity:

NOTE:

When sending an inputDTO using this field, only the value is needed.

Example: `"groupBy": "vmsByPMName"`

```
{
  "VirtualMachine": {
    "criteria": [
      {
        "filterType": "vmsByName"
      },
      {
        "filterType": "vmsByPMName"
      },
      {
        "filterType": "vmsByStorage"
      },
      {
        "filterType": "vmsByNetwork"
      },
      {
        "filterType": "vmsByApplication"
      },
      {
        "filterType": "vmsByDatabaseServer"
      },
      {
        "filterType": "vmsByDatabaseServerVersion"
      }
    ]
  }
}
```

```

    {
      "filterType": "vmsByDC"
    },
    {
      "filterType": "vmsByVDC"
    },
    {
      "filterType": "vmsByDCnested"
    },
    {
      "filterType": "vmsByNumCPUs"
    },
    {
      "filterType": "vmsByMem"
    },
    {
      "filterType": "vmsByGuestName"
    },
    {
      "filterType": "vmsByAltName"
    },
    {
      "filterType": "vmsByClusterName"
    },
    {
      "filterType": "vmsByDiskArrayName"
    },
    {
      "filterType": "vmsByLogicalPoolName"
    },
    {
      "filterType": "vmsByProfileName"
    },
    {
      "filterType": "vmsByTag"
    },
    {
      "filterType": "vmsByState"
    },
    {
      "filterType": "vmsByBusinessAccountUuid"
    },
    {
      "filterType": "vmsByResourceGroupUuid"
    }
  ]
},
"VirtualDataCenter": {
  "criteria": [
    {
      "filterType": "vdcsByName"
    },
    {
      "filterType": "vdcsByVDCName"
    },
    {
      "filterType": "vdcsByTag"
    },
    {
      "filterType": "vdcsByState"
    }
  ]
},
"PhysicalMachine": {
  "criteria": [

```



```

        {
          "filterType": "pmsByName"
        },
        {
          "filterType": "pmsByStorage"
        },
        {
          "filterType": "pmsByNetwork"
        },
        {
          "filterType": "pmsBySwitch"
        },
        {
          "filterType": "pmsByNumVms"
        },
        {
          "filterType": "pmsByDC"
        },
        {
          "filterType": "pmsByMem"
        },
        {
          "filterType": "pmsByNumCPUs"
        },
        {
          "filterType": "pmsByVendorName"
        },
        {
          "filterType": "pmsByCPUModel"
        },
        {
          "filterType": "pmsByModel"
        },
        {
          "filterType": "pmsByTimezone"
        },
        {
          "filterType": "pmsByClusterName"
        },
        {
          "filterType": "pmsByTag"
        },
        {
          "filterType": "pmsByState"
        }
      ]
    },
    "Storage": {
      "criteria": [
        {
          "filterType": "storageByName"
        },
        {
          "filterType": "storageByTag"
        },
        {
          "filterType": "storageByVMs"
        },
        {
          "filterType": "storageByDC"
        },
        {
          "filterType": "storageByPMCluster"
        }
      ],
    }
  }

```

```

    "filterType": "storageByState"
  }
]
},
"Application": {
  "criteria": [
    {
      "filterType": "appsByName"
    },
    {
      "filterType": "appsByTag"
    }
  ]
},
"ApplicationComponent": {
  "criteria": [
    {
      "filterType": "appSrvsByName"
    }
  ]
},
"WebServer": {
  "criteria": [
    {
      "filterType": "wbSrvsByName"
    }
  ]
},
"BusinessApplication": {
  "criteria": [
    {
      "filterType": "busAppsByName"
    }
  ]
},
"Database": {
  "criteria": [
    {
      "filterType": "databaseByName"
    },
    {
      "filterType": "databaseByTag"
    },
    {
      "filterType": "databaseByBusinessAccountUuid"
    },
    {
      "filterType": "databaseByResourceGroupUuid"
    }
  ]
},
"DatabaseServer": {
  "criteria": [
    {
      "filterType": "databaseServerByName"
    },
    {
      "filterType": "databaseServerByTag"
    },
    {
      "filterType": "databaseServerByBusinessAccountUuid"
    },
    {
      "filterType": "databaseServerByEngine"
    }
  ]
},

```

```

        {
          "filterType": "databaseServerByEdition"
        },
        {
          "filterType": "databaseServerByVersion"
        }
      ]
    },
    "VirtualApplication": {
      "criteria": [
        {
          "filterType": "vappsByName"
        }
      ]
    },
    "Cluster": {
      "criteria": [
        {
          "filterType": "clustersByName"
        },
        {
          "filterType": "clustersByTag"
        }
      ]
    },
    "DataCenter": {
      "criteria": [
        {
          "filterType": "datacentersByName"
        },
        {
          "filterType": "datacentersByTag"
        }
      ]
    },
    "Group": {
      "criteria": [
        {
          "filterType": "groupsByName"
        },
        {
          "filterType": "groupsByTargetName"
        }
      ]
    },
    "StorageCluster": {
      "criteria": [
        {
          "filterType": "storageClustersByName"
        }
      ]
    },
    "DiskArray": {
      "criteria": [
        {
          "filterType": "diskarrayByName"
        }
      ]
    },
    "Zone": {
      "criteria": [
        {
          "filterType": "zonsByName"
        }
      ]
    }
  ]
}

```

```
},
"Region":{
  "criteria":[
    {
      "filterType":"regsByName"
    }
  ]
},
"Network":{
  "criteria":[
    {
      "filterType":"netsByName"
    }
  ]
},
"LoadBalancer":{
  "criteria":[
    {
      "filterType":"lbsByName"
    }
  ]
},
"Chassis":{
  "criteria":[
    {
      "filterType":"chasByName"
    }
  ]
},
"IOModule":{
  "criteria":[
    {
      "filterType":"ioModuleByName"
    }
  ]
},
"StorageController":{
  "criteria":[
    {
      "filterType":"storagecontrollerByName"
    }
  ]
},
"DPod":{
  "criteria":[
    {
      "filterType":"dpodByName"
    }
  ]
},
"VPod":{
  "criteria":[
    {
      "filterType":"vpodByName"
    }
  ]
},
"LogicalPool":{
  "criteria":[
    {
      "filterType":"logicalPoolByName"
    }
  ]
},
"Switch":{
```

```

"criteria":[
  {
    "filterType":"switchByName"
  }
]
},
"Container":{
  "criteria":[
    {
      "filterType":"containersByName"
    },
    {
      "filterType":"containersByVMName"
    }
  ]
},
"ContainerPod":{
  "criteria":[
    {
      "filterType":"containerpodsByName"
    },
    {
      "filterType":"containerpodsByVMName"
    }
  ]
},
"ServiceEntity":{
  "criteria":[
    {
      "filterType":"workloadByBusinessAccountUuid"
    },
    {
      "filterType":"workloadByResourceGroupUuid"
    }
  ]
},
"Workload":{
  "criteria":[
    {
      "filterType":"workloadByBusinessAccountUuid"
    },
    {
      "filterType":"workloadByResourceGroupUuid"
    }
  ]
},
"ResourceGroup":{
  "criteria":[
    {
      "filterType":"resourceGroupByName"
    },
    {
      "filterType":"resourceGroupByUuid"
    },
    {
      "filterType":"resourceGroupByBusinessAccountUuid"
    },
    {
      "filterType":"resourceGroupByTag"
    }
  ]
},
"BusinessAccount":{
  "criteria":[
    {

```

```

    "filterType": "businessAccountByName"
  },
  {
    "filterType": "businessAccountByUuid"
  },
  {
    "filterType": "subBusinessAccountOfUuid"
  },
  {
    "filterType": "businessAccountValidationStatus"
  },
  {
    "filterType": "businessAccountTargetName"
  },
  {
    "filterType": "businessAccountCloudProvider"
  }
]
},
"BillingFamily": {
  "criteria": [
    {
      "filterType": "billingFamilyByName"
    }
  ]
},
"ViewPod": {
  "criteria": [
    {
      "filterType": "viewPodByName"
    }
  ]
},
"DesktopPool": {
  "criteria": [
    {
      "filterType": "desktopPoolByName"
    },
    {
      "filterType": "desktopPoolByViewPod"
    }
  ]
},
"BusinessUser": {
  "criteria": [
    {
      "filterType": "businessUserByName"
    },
    {
      "filterType": "businessUserByDesktopPool"
    }
  ]
}
}

```

Admin Endpoint

The admin endpoint is a collection of requests that enable you to perform various administrative functions. To use the admin endpoint, you must be logged into Workload Optimization Manager as an administrator user.

Using the admin endpoint, you can:

- Load existing configuration files for use in your environment
- Export diagnostics locally, and send them to Support
- Get or set proxy settings
- Get or set logging levels for various components of your environment
- Get the current product version information
- Check for and apply updates to your Workload Optimization Manager appliance

Admin Requests

Getting the Current Version

Gets the version of each Workload Optimization Manager package that your instance is running. Set the `check_for_updates` parameter to `true` to additionally check for updates that may be available.

This request takes the following parameters:

<code>check_for_updates</code>	Check for available updates before returning version information. Default: <code>false</code> .
--------------------------------	---

Example: GET `https://10.10.10.10/api/v3/admin/versions?check_for_updates=true`

Response: A `ProductVersionDTO` describing details about the current version and available updates. If you are running the latest version of Workload Optimization Manager, the `updates` value will read `"No Updates Available\n"`

```
{
  "versionInfo": "Turbonomic Operations Manager 6.1.7 (Build
20180813223950000)\nvmt-platform-6.1.7-20180813223950000.i586
  ...
  "updates": "Available Packages\nvmt-bundle.i586 6.2.0-20180817180112000 vmturbo\nvmt-config.x86_64
  ...
  "marketVersion": 2
}
```

Exporting Diagnostics

If you are experiencing problems with Workload Optimization Manager, your support engineer might request that you export diagnostic data. You can export the data and then send it to the support engineer as requested.

Example: POST `https://10.10.10.10/api/v3/admin/exports`

Response: `true` if successful, `false` if an error occurs while creating the export. The export file will be saved in the `/tmp` directory on your instance with a file name that begins with `bkp-`.

Loading External Configuration Files

To help with diagnosis of some issues, a support engineer might want you to load configuration files into your Workload Optimization Manager appliance. You should only use this request while working with a support engineer, who will guide you through the process. Using the required parameters, the support engineer will specify what kind of configuration file you are loading, and the contents of that file.

Example: POST `https://10.10.10.10/api/v3/admin/configfiles?config_type=TOPOLOGY&topology=abc`

Response: `true` if successful, `false` if an error occurs while uploading the configuration.

Getting and Setting a Proxy

Gets the current state of the proxy and proxy details (if enabled).

Example: GET `https://10.10.10.10/api/v3/admin/httpproxy`

Response: A `HttpProxyDTO` describing details of the proxy. If no proxy is configured, this request returns `"isProxyEnabled": false`.

```
{
  "isProxyEnabled":true,
  "proxyHost":"10.10.111.1",
  "userName":"UserName",
  "password":"PW"
}
```

To set the proxy, pass a `HttpProxyDTO`, making sure to include `"isProxyEnabled": true` if you want to activate the proxy immediately.

Example: POST `https://10.10.10.10/api/v3/admin/httpproxy`

Example httpProxyDTO:

```
{
  "isProxyEnabled":true,
  "proxyHost":"10.10.111.1",
  "portNumber":"33128",
  "userName":"ProxyUser",
  "password":"Password"
}
```

Response: `true` if successful, `false` if an error occurs while setting the proxy.

Getting and Setting Logging Levels by Component

You can set the level of logging for different components of the Workload Optimization Manager platform. The default logging level for all components is INFO. You should be aware that setting more verbose logging levels may greatly increase the disk space required to store the log files. You normally change these settings only while you're working with a Workload Optimization Manager support engineer.

The available logging levels are (in order of least to most verbose): INFO, WARN, DEBUG, and TRACE.

Example: GET `https://10.10.10.10/api/v3/admin/logginglevels`

Response: A `LoggingApiDTO` with details about your current logging level settings:

```
{
  "componentLoggingLevel":{
    "Extension":"INFO",
    "Analysis":"INFO",
    "Discovery":"INFO",
    "API":"INFO",
    "Presentation":"INFO",
    "Abstraction":"INFO",
    "Monitoring":"INFO"
  }
}
```



```
}

```

To set the logging level for a specific component, pass a partial LoggingApiDTO containing the component and logging level.

Example: POST `https://10.10.10.10/api/v3/admin/logginglevels`

Example LoggingApiDTO:

```
{
  "componentLoggingLevel": {
    "Extension": "WARN"
  }
}
```

Response: A successful response returns your input in the response body.

Businessunits Endpoint

Business units are container objects used for modeling accounts and subscriptions in Public Cloud targets, and for cloud budgets and price adjustments.

Using the businessunits endpoint of the Workload Optimization Manager API, you can:

- For a specified business unit, get a list of:
 - All actions relating to the entities in the business unit
 - Cloud services and pricing models
 - All entities belonging to the business unit
 - Price adjustments
 - Any related (parent, sibling, or child) business units
 - Statistics relating to entities in the business unit
 - Templates available
- Get the supply chain for a specified business unit
- Create a business unit
- Edit a business unit
- Edit a price adjustment
- Delete a business unit

Business units may be one of three types, described below:

BUDGET	A business unit that has a budget, and may contain children.
DISCOUNT	A business unit that has a discount, and may contain children.
DISCOVERED	A business unit that has been discovered by the Workload Optimization Manager instance. These business units should not be edited or deleted, except on the discovered target.

Businessunits Requests

Getting Business Units

Gets a list of all business units created on or discovered by your Workload Optimization Manager instance. This request takes the following parameters:

type	The type of business unit to return. [BUDGET, DISCOUNT, DISCOVERED]
cloud_type	The cloud provider whose business units to return. [AWS, AZURE, GCP]
has_parent	Whether to return only business units that have parent business units. Default: False. When true, all relevant business units will be returned irrespective of parent business units.

Example: GET https://10.10.10.10/api/v3/businessunits?type=DISCOVERED&cloud_type=AWS

Response: A list of BusinessUnitApiDTOs that meet the selected criteria. In this case, discovered business units that are part of an AWS environment.

```
[
  {
    "uuid": "323871187550",
    "displayName": "Product Trust",
    "className": "BusinessAccount",
    "environmentType": "CLOUD",
    "master": false,
    "hasRelatedTarget": true,
    "budget": {
      "value": 0
    },
    "businessUnitType": "DISCOVERED",
    "cloudType": "AWS",
    "targets": [
      {
        "uuid": "_6glgQEEhEemQ645gSx8RYw",
        "displayName": "PT-AWS",
        "type": "AWS"
      }
    ],
    "costPrice": 0,
    "severity": "Critical",
    "membersCount": 80,
    "memberType": "Workload",
    "related": {
      "rateCard": null,
      "priceAdjustment": null
    },
    "resourceGroupsCount": 0
  },
  {
    "uuid": "001844731978",
    "displayName": "Advanced Engineering",
    "className": "BusinessAccount",
    "environmentType": "CLOUD",
    "master": false,
    "hasRelatedTarget": false,
    "budget": {
      "value": 0
    }
  }
]
```

```

"businessUnitType": "DISCOVERED",
"cloudType": "AWS",
"costPrice": 0,
"severity": "Normal",
"membersCount": 0,
"memberType": "Workload",
"related": {
  "rateCard": null,
  "priceAdjustment": null
},
"resourceGroupsCount": 0
},
{
"uuid": "192821421245",
"displayName": "Development",
"className": "BusinessAccount",
"environmentType": "CLOUD",
"master": true,
"hasRelatedTarget": true,
"budget": {
  "value": 0
},
"businessUnitType": "DISCOVERED",
"cloudType": "AWS",
"childrenBusinessUnits": [
  "631949720430",
  "001844731978",
  "323871187550"
],
"targets": [
  {
    "uuid": "_cBVj0MvWEeiFJej-UwMSGg",
    "displayName": "engineering.aws.amazon.com",
    "type": "AWS"
  }
],
"costPrice": 0,
"severity": "Critical",
"membersCount": 33,
"memberType": "Workload",
"related": {
  "rateCard": null,
  "priceAdjustment": null
},
"resourceGroupsCount": 0
},
{
"uuid": "631949720430",
"displayName": "Turbonomic SaaS",
"className": "BusinessAccount",
"environmentType": "CLOUD",
"master": false,
"hasRelatedTarget": false,
"budget": {
  "value": 0
},
"businessUnitType": "DISCOVERED",
"cloudType": "AWS",
"costPrice": 0,
"severity": "Normal",
"membersCount": 0,
"memberType": "Workload",
"related": {
  "rateCard": null,
  "priceAdjustment": null
}

```

```

    },
    "resourceGroupsCount": 0
  }
]

```

Deleting a Business Unit

To delete a business unit, pass the UUID of the business unit in the request. Note, you cannot delete DISCOVERED business units.

Example: DELETE <https://10.10.10.10/api/v3/businessunits/49d50ac3f8adbfe649d53e72c42dd9428d1d3835>

Response: A response of 200 indicates successful deletion

Getting Cloud Service and Pricing Model Pairs for a Specified Business Unit

Gets the cloud service name and pricing model for each cloud service.

Example: GET <https://10.10.10.10/api/v3/businessunits/192821421245/cloudservices>

Response: A list of CloudServicePricingModelApiDTOs representing each cloud service available to the business unit:

```

[
  {
    "uuid": "aws::631949720430::CS::AWSCloudTrail",
    "displayName": "AWS CloudTrail",
    "pricingModel": "ON_DEMAND"
  },
  {
    "uuid": "aws::631949720430::CS::AmazonCloudWatch",
    "displayName": "AWS CloudWatch",
    "pricingModel": "ON_DEMAND"
  },
  {
    "uuid": "aws::192821421245::CS::AWSDeveloperSupport",
    "displayName": "AWS Developer Support",
    "pricingModel": "ON_DEMAND"
  },
  {
    "uuid": "aws::001844731978::CS::AmazonDynamoDB",
    "displayName": "AWS DynamoDB",
    "pricingModel": "ON_DEMAND"
  },
  {
    "uuid": "aws::631949720430::CS::AmazonEC2",
    "displayName": "AWS EC2",
    "pricingModel": "ON_DEMAND"
  },
  {
    "uuid": "aws::001844731978::CS::AmazonEKS",
    "displayName": "AWS EKS",
    "pricingModel": "ON_DEMAND"
  },
  ...
]

```

Getting Price Adjustments Related to a Specified Business Unit

Gets any price adjustments affecting the specified business unit.

Example: GET <https://10.10.10.10/api/v3/businessunits/192821421245/priceadjustments>

Response: A list of BusinessUnitPriceAdjustmentApiDTOs showing the corrected prices after adjustment:

```
[
  {
    "servicePriceAdjustments": [
      {
        "uuid": "aws::192821421245::CS::AmazonCloudWatch",
        "displayName": "AWS CloudWatch",
        "pricingModel": "ON_DEMAND"
      },
      {
        "uuid": "aws::192821421245::CS::AWSDeveloperSupport",
        "displayName": "AWS Developer Support",
        "pricingModel": "ON_DEMAND"
      },
      {
        "uuid": "aws::192821421245::CS::AmazonDynamoDB",
        "displayName": "AWS DynamoDB",
        "pricingModel": "ON_DEMAND"
      },
      {
        "uuid": "aws::192821421245::CS::AmazonEC2",
        "displayName": "AWS EC2",
        "pricingModel": "ON_DEMAND",
        "templateDiscounts": [
          {
            "uuid": "aws::VMPROFILE::g3.16xlarge",
            "displayName": "g3.16xlarge",
            "family": "g3",
            "pricesPerDatacenter": [
              {
                "uuid": "aws::ap-southeast-1::DC::ap-southeast-1",
                "displayName": "aws-Asia Pacific (Singapore)",
                "price": 6.68
              },
              {
                "uuid": "aws::us-west-2::DC::us-west-2",
                "displayName": "aws-US West (Oregon)",
                "price": 4.56
              },
              {
                "uuid": "aws::ca-central-1::DC::ca-central-1",
                "displayName": "aws-Canada (Central)",
                "price": 5.664
              },
              {
                "uuid": "aws::eu-west-1::DC::eu-west-1",
                "displayName": "aws-EU (Ireland)",
                "price": 4.84
              },
              {
                "uuid": "aws::eu-west-3::DC::eu-west-3",
                "displayName": "aws-EU (Paris)",
                "price": 0
              },
              {
                "uuid": "aws::ap-northeast-1::DC::ap-northeast-1",
                "displayName": "aws-Asia Pacific (Tokyo)",

```

```

        "price": 6.32
      },
      {
        "uuid": "aws::eu-central-1::DC::eu-central-1",
        "displayName": "aws-EU (Frankfurt)",
        "price": 5.7
      },
      {
        "uuid": "aws::ap-south-1::DC::ap-south-1",
        "displayName": "aws-Asia Pacific (Mumbai)",
        "price": 0
      },
      {
        "uuid": "aws::ap-northeast-2::DC::ap-northeast-2",
        "displayName": "aws-Asia Pacific (Seoul)",
        "price": 0
      },
      {
        "uuid": "aws::us-east-1::DC::us-east-1",
        "displayName": "aws-US East (N. Virginia)",
        "price": 4.56
      },
      {
        "uuid": "aws::us-west-1::DC::us-west-1",
        "displayName": "aws-US West (N. California)",
        "price": 6.136
      },
      {
        "uuid": "aws::sa-east-1::DC::sa-east-1",
        "displayName": "aws-South America (Sao Paulo)",
        "price": 0
      },
      {
        "uuid": "aws::ap-southeast-2::DC::ap-southeast-2",
        "displayName": "aws-Asia Pacific (Sydney)",
        "price": 7.016
      },
      {
        "uuid": "aws::us-east-2::DC::us-east-2",
        "displayName": "aws-US East (Ohio)",
        "price": 4.56
      },
      {
        "uuid": "aws::eu-north-1::DC::eu-north-1",
        "displayName": "aws-EU (Stockholm)",
        "price": 0
      },
      {
        "uuid": "aws::eu-west-2::DC::eu-west-2",
        "displayName": "aws-EU (London)",
        "price": 0
      }
    ]
  },
  {
    "uuid": "aws::VMPROFILE::p3.8xlarge",
    "displayName": "p3.8xlarge",
    "family": "p3",
    "pricesPerDatacenter": [
      {
        "uuid": "aws::ap-southeast-1::DC::ap-southeast-1",
        "displayName": "aws-Asia Pacific (Singapore)",
        "price": 16.936
      },
      {

```



```

    "value": 50
  },
  "childrenBusinessUnits": [
    "192821421245"
  ],
  "businessUnitType": "DISCOUNT",
  "uuid": "c0acb428d7b447a5d51f9888d2b6660b5fa5225f"
}

```

Response: The full BusinessUnitPriceAdjustmentApiDTO with the corrected values:

```

{
  "uuid": "c0acb428d7b447a5d51f9888d2b6660b5fa5225f",
  "displayName": "Daltest1",
  "className": "BusinessAccount",
  "environmentType": "CLOUD",
  "discount": 50,
  "priceAdjustment": {
    "type": "DISCOUNT",
    "value": 50
  },
  "master": false,
  "hasRelatedTarget": false,
  "budget": {
    "value": 0
  },
  "businessUnitType": "DISCOUNT",
  "cloudType": "AWS",
  "childrenBusinessUnits": [
    "192821421245"
  ],
  "costPrice": 0,
  "severity": "Normal",
  "membersCount": 0,
  "memberType": "Workload",
  "related": {
    "rateCard": null,
    "priceAdjustment": {
      "uuid": "c0acb428d7b447a5d51f9888d2b6660b5fa5225f",
      "displayName": "Daltest1",
      "className": "BusinessAccount"
    }
  }
},
  "resourceGroupsCount": 0
}

```

Getting Templates Available to a Business Unit

Referenced Endpoint: [Templates \(on page 255\)](#)

Gets details about each template available to the specified business unit:

Example: GET <https://10.10.10.10/api/v3/businessunits/192821421245/templates>

Response: A list of TemplateApiDTOs representing the available templates for the specified business unit:

```

[
  {
    "links": [

```



```

    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/templates/B4166E9F-589B-357D-AC74-0A534B53CE85"
    }
  ],
  "uuid": "B4166E9F-589B-357D-AC74-0A534B53CE85",
  "displayName": "db.x1e.32xlarge",
  "className": "DatabaseServerProfile",
  "price": 0,
  "model": "db.x1e.32xlarge",
  "dbEngine": "Oracle",
  "dbEdition": "Enterprise",
  "computeResources": [
    {
      "stats": [
        {
          "name": "numOfCpu",
          "value": 128
        },
        {
          "name": "cpuSpeed",
          "units": "MHz",
          "value": 384000
        },
        {
          "name": "ioThroughputSize",
          "units": "MB/s",
          "value": 546.875
        },
        {
          "name": "memorySize",
          "units": "MB",
          "value": 3997696
        }
      ]
    }
  ]
},
"storageResources": [
  {
    "stats": [
      {
        "name": "diskSize",
        "units": "GB",
        "value": 3840
      },
      {
        "name": "diskIops",
        "value": 35000
      }
    ]
  }
],
"deploymentProfile": {
  "uuid": "5C57DCA5-72AB-34BF-A22D-06719D13182E",
  "displayName": "DEP-RDB-'ap-northeast-1'",
  "className": "ServiceCatalogItem",
  "deployParameters": [
    {
      "targetType": "AWS",
      "providers": [
        {
          "provider": {
            "discoveredBy": {
              "uuid": "_RRn00PMSEeisB7K_chUWVw",
              "displayName": "vmturbodev.aws.amazon.com",
            }
          }
        }
      ]
    }
  ]
}

```

```

        "type": "AWS"
      }
    ]
  },
  "discovered": true
},
{
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/templates/aws::VMPROFILE::g3.16xlarge"
    }
  ],
  "uuid": "aws::VMPROFILE::g3.16xlarge",
  "displayName": "g3.16xlarge",
  "className": "VirtualMachineProfile",
  "description": "g3.16xlarge",
  "computeResources": [
    {
      "stats": [
        {
          "name": "ioThroughputSize",
          "units": "MB/s",
          "value": 1750
        },
        {
          "name": "networkThroughputSize",
          "units": "MB/s",
          "value": 2500
        },
        {
          "name": "numOfCpu",
          "value": 64
        },
        {
          "name": "cpuSpeed",
          "units": "MHz",
          "value": 6664.6587
        },
        {
          "name": "cpuConsumedFactor",
          "units": "%",
          "value": 50
        },
        {
          "name": "memorySize",
          "units": "MB",
          "value": 499712
        },
        {
          "name": "memoryConsumedFactor",
          "units": "%",
          "value": 75
        },
        {
          "name": "ioThroughput",
          "units": "MB/s",
          "value": 0
        },
        {
          "name": "networkThroughput",

```

```

        "units": "MB/s",
        "value": 0
    }
]
},
],
"storageResources": [
{
    "stats": [
        {
            "name": "diskSize",
            "units": "GB",
            "value": 976562.5
        },
        {
            "name": "diskIops",
            "value": 20000
        },
        {
            "name": "diskConsumedFactor",
            "units": "%",
            "value": 100
        }
    ]
}
],
},
],
"deploymentProfile": {
    "uuid": "aws:us-east-1:DP:DEP-fake-us-east-1",
    "displayName": "DEP-fake-us-east-1",
    "className": "ServiceCatalogItem",
    "deployParameters": [
        {
            "targetType": "AWS",
            "providers": [
                {
                    "provider": {
                        "discoveredBy": {
                            "uuid": "_RRn00PMSEeisB7K_chUWVw",
                            "displayName": "vmturbodev.aws.amazon.com",
                            "type": "AWS"
                        }
                    }
                }
            ]
        }
    ]
},
"discovered": true,
"family": "g3"
},
...
]

```

Entities Endpoint

Entities are the objects in your topology that Workload Optimization Manager manages. For example, VMs, hosts, datastores, and applications are all entities. Workload Optimization Manager discovers entities via targets, it monitors and analyzes their utilization of resources, and it recommends actions to change the placement, configuration, or state of entities.

Each market manages a set of entities. Using a market's UUID, you can get a list of entities managed by that market. For each entity you can get a full range of data, including the resources it buys and sells, the providers it buys resources from, actions for the entity, and other associated information.

Remember that more than one market can be resident in memory at a given time – Workload Optimization Manager maintains a real-time market, and there can also be plan markets in memory. As you access market entities, you should keep the following in mind:

- Entities in the real-time market reflect the current state in your physical environment
- You should never add or remove entities in the real-time market
- Entities in a plan market reflect a snapshot of the environment from when the market was created
- Plan markets can be scoped to a subset of your physical environment
- You *can* add or remove entities in a plan market

An interesting point about entities and markets – A plan market can contain entities that are also managed by the real-time market. These entities have the same stats in both markets. Workload Optimization Manager independently performs analysis on these entities in both markets.

Using the entities endpoint of the Workload Optimization Manager API, you can get a list of entities (from the market or group that contains the entities). For an individual entity you can get:

- Actions and related data for an entity
- Constraints assigned to the entity
- Through the entity constraints, get the available providers and consumers for the entity
- Groups the entity belongs to
- Notifications and notification data
- Workload placement policies that affect this entity
- Automation policies that affect this entity
- Stats for the entity
- The supply chain of entities that stitch directly with this entity
- Any tags that are defined for the entity

This endpoint contains references to start and end times for certain operations. For more information, including valid time formats, see [Time in the Workload Optimization Manager API \(on page 17\)](#)

Entities Utility Requests

Utility requests provide metadata that you can use to make related requests, assemble inputDTOs, or see the potential values of a particular DTO.

Getting a List of Entry Points for Entities

The entities endpoint contains a utility request that shows the entry points you can use to get lists of entities. These can be used to find the UUID and details relating to specific entities.

Example: GET `https://10.10.10.10/api/v3/entities`

Response: An array of Link objects, where each object contains a URL to get all entities for a specified market or group.

```
{
  "links": [
    {
      "rel": "Market actions",
      "href": "https://10.10.10.10/api/v3/markets/{uuid}/entities"
    },
  ],
}
```

```

{
  "rel": "Group actions",
  "href": "https://10.10.10.10/api/v3/groups/{uuid}/entities"
}
]
}

```

Getting a List of Entry Points for a Single Entity

If you pass an entity UUID to the entities endpoint, then you get a description of the entity, plus a list of entry points for entity data such as stats, constraints, actions, etc.

Example: GET <https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073>

Response: An array of Link objects, where each object contains a URL to get information about the entity.

```

{
  "links": [
    {
      "rel": "self",
      "href":
      "https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073?include_aspects=false"
    },
    {
      "rel": "To Stats",
      "href": "https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073/stats"
    },
    {
      "rel": "Entity notifications",
      "href": "https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073/notifications"
    },
    {
      "rel": "Entity actions",
      "href":
      "https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073/actions?ascending=false"
    },
    {
      "rel": "To Constraints",
      "href": "https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073/policies"
    },
    {
      "rel": "To Settings",
      "href":
      "https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073/settings?include_settingspolicies=false"
    },
    {
      "rel": "To Entity List",
      "href": "https://10.10.10.10/api/v3/entities"
    }
  ],
  ...
}

```

Entities Requests

Getting Entities

Referenced Endpoint: [Groups \(on page 87\)](#)

To get a list of entities, start with the object that contains those entities. This is usually a market or a group. You work with individual entities via their UUIDs – A list of entities gives you a list of UUIDs that you can work with.

NOTE:

When working with groups, you should remember that a list of entities in the group is not the same as a list of group members. Assume a group of host clusters. In that case, the list of entities would be all the hosts in those clusters, while the group members would be a list of clusters, plus all the hosts in each cluster. For more information, see [Groups Endpoint \(on page 87\)](#).

Example: GET `https://10.10.10.10/api/v3/groups/_BZbFswXUEemoItN1K8jw3Q/entities`

Response: A list of EntityApiDTOs.

```
[
  {
    "links": [
      ...
    ],
    "uuid": "azure::VM::2ffc038a-7af3-4d23-86a9-211da2e4d433",
    "displayName": "e47f9c97-b44d-4461-be02-0304b97e201e",
    "className": "VirtualMachine",
    "priceIndex": 1.0067123,
    "state": "ACTIVE",
    "severity": "Critical",
    "costPrice": 0.64534247,
    "discoveredBy": {
      "uuid": "_-S8GgFYoEemHGieet0BOnQ",
      "displayName": "758ad253-cbf5-4b18-8863-3eed0825bf07",
      "type": "Azure"
    },
    "remoteId": "azure::VM::2ffc038a-7af3-4d23-86a9-211da2e4d433",
    "providers": [
      {
        "uuid": "azure::ST::eastus2-managed_premium",
        "displayName": "azure-eastus2-Managed Premium",
        "className": "Storage"
      },
      {
        "uuid": "azure::eastus2::PM::eastus2",
        "displayName": "azure-eastus2",
        "className": "PhysicalMachine"
      }
    ],
    "consumers": [
      {
        "uuid": "azure::APP::2ffc038a-7af3-4d23-86a9-211da2e4d433",
        "displayName": "GuestLoad [e47f9c97-b44d-4461-be02-0304b97e201e]",
        "className": "Application"
      }
    ],
    "template": {
      "uuid": "azure::VMPROFILE::Standard_DS13_v2",
      "displayName": "Standard_DS13_v2",
      "discovered": false,

```

```

    "enableMatch": false
  },
  "environmentType": "CLOUD",
  "tags": {
    "instance_group": [
      "diego_cell"
    ]
  }
},
{
  ...
}
]

```

Getting Actions Related to an Entity

Referenced Endpoint: [Actions \(on page 29\)](#)

If you provide the entity UUID but do not provide an action UUID, this returns a list of ActionApiDTOs for all the actions that are current for the entity. If you provide both the entity UUID and the action UUID, it returns the ActionApiDTO for the specified action.

This request takes the following parameters:

entity_Uuid	The UUID of the entity whose actions will be returned.
action_Uuid	The UUID of the action you want to get - Required to get a single action.
cursor	When making subsequent calls to retrieve additional results, this is the cursor returned by the last call to this method.
limit	The maximum number of items to return. Must be a positive integer. If not set, the server will provide a default (20).
order_by	The field to order the results by. [creation_date, name, risk_category, savings, severity].
ascending	Default: true. When false, results will be in descending order.

Examples:

- Get a list of actions for the passed entity: GET https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073/actions?order_by=severity&ascending=true
- Get a single action for the entity: GET <https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073/actions/9223304219064809841>

Response: A list of ActionApiDTOs representing the actions that are current for the given entity, or a single ActionApiDTO for the specified action. The following listing shows the list of ActionApiDTOs wrapped in an array.

```

[
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/actions/9223304219106592017"
      },
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/actions/2560158594896"
      }
    ]
  }
]

```

```

    }
  ],
  "uuid": "9223304219106592017",
  "createTime": "2019-04-23T10:41:37-04:00",
  "actionType": "RIGHT_SIZE",
  "actionState": "PENDING_ACCEPT",
  "actionMode": "MANUAL",
  "details": "Scale down VMem for VirtualMachine vEOS-4 from 2 GB to 623 MB",
  "importance": 0,
  "target": {
    "uuid": "420b1eeb-6190-a9d2-6436-4327ad3ac073",
    "displayName": "vEOS-4",
    "className": "VirtualMachine",
    "discoveredBy": {
      "uuid": "_FJwg0EzHEemaXZFq0lsC0g",
      "displayName": "vsphere-dc11.dev.mycorp.com",
      "type": "vCenter"
    }
  },
  "aspects": {
    "virtualMachineAspect": {
      "os": "Other 2.6.x Linux (32-bit)",
      "connectedNetworks": [
        {
          "uuid": "d2da5316adfff0bf779652bbe7eb76c3307c2ab5",
          "displayName": "Infrastructure"
        },
        {
          "uuid": "bbef68e6ee0e76ba2c82960012b4ba563b78fdbb",
          "displayName": "vmnet4"
        },
        {
          "uuid": "d59c5e7e738ad9d2e2cb45aac5fe0073d36b49fb",
          "displayName": "vmnet6"
        },
        {
          "uuid": "96a42a4d438d1336e8d2c6962c976d889792af8a",
          "displayName": "vmnet8"
        },
        {
          "uuid": "067bc9d882e9681c55d964295e43134711520145",
          "displayName": "vmnet57"
        },
        {
          "uuid": "05b0ce5abc5cecc4104b26514b11618d77818c6d",
          "displayName": "vmnet59"
        }
      ]
    },
    "numVCPUs": 1,
    "type": "VMEntityAspectApiDTO"
  }
},
"environmentType": "ONPREM"
},
"currentEntity": {
  "uuid": "_3vIfwmXVEemoItN1K8jw3Q",
  "className": "VMem"
},
"newEntity": {
  "uuid": "_5fnl82XVEemoItN1K8jw3Q",
  "className": "VMem",
  "aspects": {
    "virtualMachineAspect": {
      "os": "Linux (Free)",
      "type": "VMEntityAspectApiDTO"
    }
  }
}

```



```

    }
  },
  "currentValue": "2097152.0",
  "newValue": "637952.0",
  "resizeToValue": "637952.0",
  "risk": {
    "uuid": "_5fr3YWXVEemoItN1K8jw3Q",
    "subCategory": "Efficiency Improvement",
    "description": "Underutilized VMem in Virtual Machine 'vEOS-4'",
    "severity": "MINOR",
    "importance": 0,
    "reasonCommodity": "VMem"
  },
  "stats": [
    {
      "name": "costPrice",
      "filters": [
        {
          "type": "savingsType",
          "value": "savings"
        }
      ],
      "units": "$",
      "value": 69.58008
    }
  ],
  "currentLocation": {
    "uuid": "98e12595449d993db8861c1f94c8f86ba277f17b",
    "displayName": "Cloud",
    "className": "DataCenter"
  },
  "newLocation": {
    "uuid": "98e12595449d993db8861c1f94c8f86ba277f17b",
    "displayName": "Cloud",
    "className": "DataCenter"
  },
  "actionID": 2560158594896
},
...
]

```

Getting a Filtered List of Actions Related to an Entity

Referenced Endpoint: [Actions \(on page 29\)](#)

Gets a list of actions, given a market UUID and filtered by an ActionApilnputDTO using one or more of the following criteria:

Criteria	Description
actionModelList	<ul style="list-style-type: none"> ▪ DISABLED: Do not recommend or perform the action. When you disable an action, the user interface will no longer display actions of that type. ▪ RECOMMENDED: Recommend the action so a user can execute it via the given hypervisor or by other external means ▪ MANUAL: Recommend the action, and provide the option to execute that action through the Workload Optimization Manager user interface or an /actions API request.

Criteria	Description
	<ul style="list-style-type: none"> ▪ AUTOMATED: You have directed Workload Optimization Manager to execute the action automatically. ▪ COLLECTION (UNUSED): Legacy action mode, no longer used.
actionStateList	<ul style="list-style-type: none"> ▪ DISABLED: An action whose policy has been disabled. ▪ RECOMMEND: An action that cannot be automated due to policy settings or must be executed outside the system, such as the purchase of hardware. ▪ PENDING_ACCEPT: When the action mode is set to manual, a recommended action that has not been accepted or cleared. ▪ ACCEPTED: An action that has been accepted, but is not yet in progress. ▪ IN_PROGRESS: An action that is being executed. ▪ SUCCEEDED: An action that was accepted and completed successfully. ▪ FAILED: An action that was accepted and did not complete successfully. ▪ REJECTED: When the action mode is set to manual, an action that has been rejected by the user. ▪ CLEARED: When the action mode is set to manual, an action that is no longer recommended by the market. ▪ ACCOUNTING: For cloud entities, an action to resize in order to use a different instance template. ▪ QUEUED: When more than 10 actions are to be executed for a single target, Workload Optimization Manager will place the 11th and all subsequent actions into a QUEUED state, and they will execute as the previous actions complete.
actionTypeList	<ul style="list-style-type: none"> ▪ START: Start an entity, and add it to the Workload Optimization Manager market. ▪ MOVE: Move an entity from one provider to another. For example, moving a VM between hosts, or a datastore between disk arrays. ▪ SUSPEND: Suspend the entity to exclude its capacity from your environment. Suspend does not remove the entity from your environment, but the market does not include the entity in its analysis. Based on market conditions, analysis can rec-

Criteria	Description
	<p>Recommend restarting suspended entities, which includes them in market analysis once again.</p> <ul style="list-style-type: none"> ▪ ADD_PROVIDER: This is equivalent to the <code>START</code> action, but for storage entities. ▪ CHANGE: Move a virtual machine's storage between datastores. ▪ PROVISION: Add capacity to your environment. ▪ RECONFIGURE: Analysis recommends this when a VM is not able to correct a misconfiguration via another type of action. For example, analysis can recommend a <code>RECONFIGURE</code> action when a placement policy requires a VM to move to a host on a particular cluster, but cross-cluster moves are not permitted. ▪ DELETE: This is equivalent to the <code>SUSPEND</code> action, but for storage entities. ▪ RESERVE_ON_PM: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular host. ▪ RESERVE_ON_DS: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular datastore. ▪ RESIZE_FOR_EFFICIENCY: A resize that reduces the capacity of a commodity, such as vCPU, or vMEM. ▪ RESIZE_FOR_PERFORMANCE: A resize that increases the capacity of a commodity, such as vCPU, or vMEM.
cleared	<p>Default: <code>false</code>.</p> <p>When <code>true</code>, actions that were removed from the action list before being executed will be returned.</p>
costType	<ul style="list-style-type: none"> ▪ Saving An action that will decrease cloud spending. ▪ Investment An action that will increase cloud spending.
cumulative	<p>Default: <code>false</code>.</p> <p>When <code>true</code>, shows the savings for each action in a scope as a cumulative total, rather than showing the savings for individual actions.</p>
environmentType	<ul style="list-style-type: none"> ▪ ONPREM: Returns only actions related to entities that are part of your on-premises environment. ▪ CLOUD: Returns only actions related to entities that are part of your cloud environment.

Criteria	Description
groupBy	You may group the actions returned by the following criteria: [actionModes, actionStates, actionTypes, risk, riskSeverity, riskSubCategory]
hasReservedInstance	Default: false. When true, only actions that are related to reserved instances will be returned.
relatedEntityTypes	Returns only actions related to entities of these types within the scope. For example, if your scope is a virtual datacenter and you specify VirtualMachine as a related entity type, the request will include only those actions related to VMs in the specified virtual datacenter. Choose from the following entity types: [Datacenter, PhysicalMachine, VirtualMachine, Storage, Application, Chassis, DiskArray, IOModule, StorageControl, Switch, VirtualDataCenter, VPod, DPod, Container, Database, DatabaseServerContainer, Logical-Pool]
riskSeverityList	Returns only actions of the given severities: [Unknown, Normal, Minor, Major, Critical]
riskSubCategoryList	returns only actions of the given subcategories: [Performance Assurance, Efficiency Improvement, Prevention, Compliance]

This request takes the following parameters:

entity_Uuid	The UUID of the market whose actions will be returned.
cursor	When making subsequent calls to retrieve additional results, this is the cursor returned by the last call to this method.
limit	The maximum number of items to return. Must be a positive integer. If not set, the server will provide a default (20).
order_by	The field to order the results by: [creation_date, name, risk_category, savings, severity].
ascending	Default: true. When false, results will be in descending order.

Example: POST https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073/actions?order_by=severity&ascending=true

Example input: In this example, a list of actions that meet the following criteria will be returned and grouped by the actionMode of the action, in order of severity:

- Is in state PENDING_ACCEPT
- Is part of an on-premises environment
- Is an action for a virtual machine

```
{
  "actionInput": {
    "actionStateList": [
      "PENDING_ACCEPT"
    ],
  },
}
```

```

"environmentType": "ONPREM",
"groupBy": [
  "actionModes"
],
},
"relatedType": "VirtualMachine",
"scopes": [
  "Market"
]
}

```

Response: A list of ActionApiDTOs that meet the specified criteria.

Getting Statistics for a Filtered List of Actions Of an Entity

Referenced Endpoint: [Actions \(on page 29\)](#)

Referenced Endpoint: [Stats \(on page 220\)](#)

Gets a list of statistics for a filtered list of actions that are current for the passed entity. Statistics returned include the number of actions, total savings/investment, and the number of entities affected by the actions. In addition to the Entity UUID, provide an ActionApiInputDTO using one or more of the following criteria:

Criteria	Description
actionModelList	<ul style="list-style-type: none"> ▪ DISABLED: Do not recommend or perform the action. When you disable an action, the user interface will no longer display actions of that type. ▪ RECOMMENDED: Recommend the action so a user can execute it via the given hypervisor or by other external means ▪ MANUAL: Recommend the action, and provide the option to execute that action through the Workload Optimization Manager user interface or an /actions API request. ▪ AUTOMATED: You have directed Workload Optimization Manager to execute the action automatically. ▪ COLLECTION (UNUSED): Legacy action mode, no longer used.
actionStateList	<ul style="list-style-type: none"> ▪ DISABLED: An action whose policy has been disabled. ▪ RECOMMEND: An action that cannot be automated due to policy settings or must be executed outside the system, such as the purchase of hardware. ▪ PENDING_ACCEPT: When the action mode is set to manual, a recommended action that has not been accepted or cleared. ▪ ACCEPTED: An action that has been accepted, but is not yet in progress. ▪ IN_PROGRESS:

Criteria	Description
	<p>An action that is being executed.</p> <ul style="list-style-type: none"> ▪ SUCCEEDED: An action that was accepted and completed successfully. ▪ FAILED: An action that was accepted and did not complete successfully. ▪ REJECTED: When the action mode is set to manual, an action that has been rejected by the user. ▪ CLEARED: When the action mode is set to manual, an action that is no longer recommended by the market. ▪ ACCOUNTING: For cloud entities, an action to resize in order to use a different instance template. ▪ QUEUED: When more than 10 actions are to be executed for a single target, Workload Optimization Manager will place the 11th and all subsequent actions into a QUEUED state, and they will execute as the previous actions complete.
actionTypeList	<ul style="list-style-type: none"> ▪ START: Start an entity, and add it to the Workload Optimization Manager market. ▪ MOVE: Move an entity from one provider to another. For example, moving a VM between hosts, or a datastore between disk arrays. ▪ SUSPEND: Suspend the entity to exclude its capacity from your environment. Suspend does not remove the entity from your environment, but the market does not include the entity in its analysis. Based on market conditions, analysis can recommend restarting suspended entities, which includes them in market analysis once again. ▪ ADD_PROVIDER: This is equivalent to the START action, but for storage entities. ▪ CHANGE: Move a virtual machine's storage between datastores. ▪ PROVISION: Add capacity to your environment. ▪ RECONFIGURE: Analysis recommends this when a VM is not able to correct a misconfiguration via another type of action. For example, analysis can recommend a RECONFIGURE action when a placement policy requires a VM to move to a host on a particular cluster, but cross-cluster moves are not permitted. ▪ DELETE: This is equivalent to the SUSPEND action, but for storage entities. ▪ RESERVE_ON_PM:

Criteria	Description
	<p>When using the reservation functionality, this is the action to reserve the resources of a VM on a particular host.</p> <ul style="list-style-type: none"> RESERVE_ON_DS: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular datastore. RESIZE_FOR_EFFICIENCY: A resize that reduces the capacity of a commodity, such as vCPU, or vMEM. RESIZE_FOR_PERFORMANCE: A resize that increases the capacity of a commodity, such as vCPU, or vMEM.
cleared	<p>Default: false.</p> <p>When true, actions that were removed from the action list before being executed will be returned.</p>
costType	<ul style="list-style-type: none"> Saving An action that will decrease cloud spending. Investment An action that will increase cloud spending.
cumulative	<p>Default: false.</p> <p>When true, shows the savings for each action in a scope as a cumulative total, rather than showing the savings for individual actions.</p>
environmentType	<ul style="list-style-type: none"> ONPREM: Returns only actions related to entities that are part of your on-premises environment. CLOUD: Returns only actions related to entities that are part of your cloud environment.
groupBy	<p>You may group the actions returned by the following criteria: [actionModes, actionStates, actionTypes, risk, riskSeverity, riskSubCategory]</p>
hasReservedInstance	<p>Default: false.</p> <p>When true, only actions that are related to reserved instances will be returned.</p>
relatedEntityTypes	<p>Returns only actions related to entities of these types within the scope. For example, if your scope is a virtual datacenter and you specify VirtualMachine as a related entity type, the request will include only those actions related to VMs in the specified virtual datacenter.</p> <p>Choose from the following entity types: [Datacenter, PhysicalMachine, VirtualMachine, Storage, Application, Chassis, DiskArray, IOModule, StorageControl, Switch, VirtualDataCenter, VPod, DPod, Container, Database, DatabaseServerContainer, Logical-Pool]</p>
riskSeverityList	<p>Returns only actions of the given severities: [Unknown, Normal, Minor, Major, Critical]</p>

Criteria	Description
riskSubCategoryList	returns only actions of the given subcategories: [Performance Assurance, Efficiency Improvement, Prevention, Compliance]

Example: POST <https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073/actions/stats>

Example input: Get a list of stats for actions that meet the following criteria, grouped by the `actionMode` of the action, in order of severity:

- Is in state `PENDING_ACCEPT`
- Is part of an on-premises environment
- Is an action for a virtual machine
- Is an action generated by the Workload Optimization Manager real-time market

```
{
  "actionInput": {
    "actionStateList": [
      "PENDING_ACCEPT"
    ],
    "environmentType": "ONPREM",
    "groupBy": [
      "actionModes"
    ]
  },
  "relatedType": "VirtualMachine"
}
```

Response: A list of `StatSnapshotApiDTOs` that aggregate statistics about the filtered actions.

```
[
  {
    "date": "2019-04-24T03:56:34-04:00",
    "statistics": [
      {
        "name": "numActions",
        "values": {
          "max": 1,
          "min": 1,
          "avg": 1,
          "total": 1
        },
        "value": 1
      },
      {
        "name": "costPrice",
        "filters": [
          {
            "type": "property",
            "value": "savings"
          }
        ],
        "units": "$",
        "values": {
          "max": 69.77539,
          "min": 69.77539,
          "avg": 69.77539,
          "total": 69.77539
        }
      }
    ]
  }
]
```



```

        "value": 69.77539
    },
    {
        "name": "numEntities",
        "values": {
            "max": 1,
            "min": 1,
            "avg": 1,
            "total": 1
        },
        "value": 1
    }
]
}
]

```

Getting the Constraints for placement of an entity

When it calculates where to place an entity, Workload Optimization Manager respects whatever placement constraints there might be in your environment. For example, unless you have a Merge Cluster policy in effect, VM placement is constrained to hosts in the same cluster.

This call gets a ConstraintApiDTO object, which describes these constraints for the specified entity. The data in this object is equivalent to the Placement Constraints view that you can see in the user interface. To see this view, you drill down to the policy view for a single entity. In this view you can see the entity's related providers and consumers. You can also open a view for each related entity to show the constraints that limit potential placement for the entity. Also in this view, you can test out different placement options. (For information about testing different placement options, see [Inspecting placement options within constraints for an element \(on page 59\)](#).)

In the same way, the ConstraintApiDTO contains data objects to describe the current placement relationships, as well as potential changes you could make. The DTO delivers an array of objects for each consumer or provider. Within each object:

- `relation` indicates whether the entity is a provider (bought) or consumer (sold)
- `relatedEntities` describes the current consumer or provider
- `placementOptions` show other placement you could exploit for this relationship, if you were to remove the current constraints (via merge policies or other means)

Example: GET `https://10.10.10.10/api/v3/entities/420b1eeb-6190-a9d2-6436-4327ad3ac073/constraints`

Response: This listing shows a subset of the related entities and placement options:

```

[
  {
    "relation": "bought",
    "entityType": "PhysicalMachine",
    "relatedEntities": [
      {
        "links": [
          {
            "rel": "self",
            "href":
"https://10.10.10.10/api/v3/entities/30333436-3638-5355-4532-313159335631?include_aspects=false"
          }
        ],
        "uuid": "30333436-3638-5355-4532-313159335631",
        "displayName": "hp-dl571.dev.mycorp.com",
        "className": "PhysicalMachine",
        "priceIndex": 6.577457,
        "state": "ACTIVE",
        "severity": "Normal",
        "discoveredBy": {

```

```

        "uuid": "_FJwg0EzHEemaXZFq01sC0g",
        "displayName": "vsphere-dc11.dev.mycorp.com",
        "type": "vCenter"
    },
    "remoteId": "host-30",
    "environmentType": "ONPREM"
}
],
"numPotentialEntities": 1,
"placementOptions": [
    {
        "constraintType": "ClusterCommodity",
        "scope": {
            "uuid": "17fe23bc346750d62dce8ba4274fa99b4739975f",
            "displayName": "Cloud\\Physical"
        },
        "target": {
            "uuid": "_FJwg0EzHEemaXZFq01sC0g",
            "displayName": "vCenter:vsphere-dc11.dev.mycorp.com",
            "type": "vCenter"
        },
        "numPotentialEntities": 3,
        "key": "Cluster::17fe23bc346750d62dce8ba4274fa99b4739975f"
    },
    {
        "constraintType": "NetworkCommodity",
        "scope": {
            "displayName": "NetworkCommodity/vEOS-4"
        },
        "numPotentialEntities": 2,
        "key": "DistributedVirtualPortgroup:vmnet4"
    },
    {
        "constraintType": "DatastoreCommodity",
        "scope": {
            "uuid": "5a822e24-584bce98-ecb2-441ea15e2534",
            "displayName": "SCIO:ESXDC11DS2"
        },
        "target": {
            "uuid": "_FJwg0EzHEemaXZFq01sC0g",
            "displayName": "vCenter:vsphere-dc11.dev.mycorp.com",
            "type": "vCenter"
        },
        "numPotentialEntities": 2,
        "key": "Storage::5a822e24-584bce98-ecb2-441ea15e2534"
    },
    {
        "constraintType": "DataCenterCommodity",
        "scope": {
            "uuid": "98e12595449d993db8861c1f94c8f86ba277f17b",
            "displayName": "Cloud"
        },
        "target": {
            "uuid": "_FJwg0EzHEemaXZFq01sC0g",
            "displayName": "vCenter:vsphere-dc11.dev.mycorp.com",
            "type": "vCenter"
        },
        "numPotentialEntities": 7,
        "key": "DataCenter::98e12595449d993db8861c1f94c8f86ba277f17b"
    }
]
},
{
    "relation": "sold",
    "entityType": "Application",

```

```

    ...
  }
]

```

Inspecting Placement Options Within Constraints for an Element

Within the given constraints that limit placement of an entity, there are usually a number of options for placement. The current placement is just one of many.

For information about getting entity constraints, see [Getting the Constraints for Placement of an Entity \(on page 59\)](#).

When you get the constraints for an entity, the ConstraintApiDTO includes other placement options for that entity on its providers, and options to place other consumers on the entity. The call in this section passes these placement options and returns the respective providers or consumers that satisfy the resulting constraint changes.

Making this call is equivalent to clicking **Find More Placement Options** in the user interface. To see this in the user interface, set the scope to a single entity, display the POLICIES tab, and scroll down to the Placement Constraints section. Then click **Constraints** next to the provider you want to explore, and click **Find More Placement Options**.

Example: POST `https://10.10.10.10/api/v3/entities/420b1eeb-6190-a9d2-6436-4327ad3ac073/constraints/entities`

Example input: In this example, we pass two placement options, that we copied from a ConstraintApiDTO for the entity we're inspecting. Note that each placement option in the ConstraintApiDTO includes a `constraintType` and a `key`. To pass a placement option, these are the only fields we need. For this example we pass a `ClusterCommodity` constraint and a `DatastoreCommodity` constraint.

```

{
  "relation": "bought",
  "placementOptions": [
    {
      "constraintType": "ClusterCommodity",
      "key": "Cluster::17fe23bc346750d62dce8ba4274fa99b4739975f"
    },
    {
      "constraintType": "DatastoreCommodity",
      "key": "Storage::5a822e24-584bce98-ecb2-441ea15e2534"
    }
  ]
}

```

Response: In the data we posted (above), the cluster commodity has three potential entities, and the datastore commodity has two potential entities. The response brings back the intersection of these three potential provider entities – Two hosts.

```

[
  {
    "links": [
      {
        "rel": "self",
        "href":
        "https://10.10.10.10/api/v3/entities/30343835-3638-584d-5131-323530394e39?include_aspects=false"
      }
    ],
    "uuid": "30343835-3638-584d-5131-323530394e39",
    "displayName": "hp-d1569.dev.mycorp.com",
    "className": "PhysicalMachine",
    "priceIndex": 1.031998,
    "state": "ACTIVE",
    "severity": "Normal",

```

```

"discoveredBy": {
  "uuid": "_FJwg0EzHEemaXZFq01sC0g",
  "displayName": "vsphere-dc11.dev.mycorp.com",
  "type": "vCenter"
},
"remoteId": "host-3323",
"environmentType": "ONPREM"
},
{
  "links": [
    {
      "rel": "self",
      "href":
"https://10.10.10.10/api/v3/entities/30333436-3638-5355-4532-313159335631?include_aspects=false"
    }
  ],
  "uuid": "30333436-3638-5355-4532-313159335631",
  "displayName": "hp-dl571.dev.mycorp.com",
  "className": "PhysicalMachine",
  "priceIndex": 6.916899,
  "state": "ACTIVE",
  "severity": "Normal",
  "discoveredBy": {
    "uuid": "_FJwg0EzHEemaXZFq01sC0g",
    "displayName": "vsphere-dc11.dev.mycorp.com",
    "type": "vCenter"
  },
  "remoteId": "host-30",
  "environmentType": "ONPREM"
}
]

```

Getting Group Membership of an Entity

Referenced Endpoint: [Groups \(on page 87\)](#)

The Groups endpoint tells you which entities are in a given group. The `/entities/{entity_Uuid}/groups` call tells you which groups a given entity belongs to. You can make this call in two modes:

- Include relationship paths
In this mode the results include only those groups that are in a buy or sell relationship with the entity. For example, a VM entity might have relationships with a datacenter and a host cluster. The call would return entries for the datacenter, the host cluster, and the VM itself.
- Do not include relationship paths
In this mode the call returns every group that includes the passed entity as a member entity. This can be a large number of groups, including all the discovered groups as well as any custom groups you created. The results do not show buy/sell relationships.

This request takes the following parameters:

entity_Uuid	The UUID of the entity whose actions will be returned.
path	Default: false. When true, results include only related groups, and they show the providers and consumers for each group when applicable.

Examples:

- All groups (path = false): GET `https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073/groups?path=false`
- Buy/Sell related groups, only (path = true): GET `https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073/groups?path=true`

Response: A list of related groups. For the default (path = false), this returns an array of group objects.

```
[
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/groups/_lSlr0GddEemDFcIzuV5wcQ?include_aspects=false"
      }
    ],
    "uuid": "_lSlr0GddEemDFcIzuV5wcQ",
    "displayName": "CUD_Vm_Group_vEOS",
    "className": "Group",
    "environmentType": "ONPREM",
    "entitiesCount": 5,
    "membersCount": 5,
    "groupType": "VirtualMachine",
    "severity": "Normal",
    "isStatic": true,
    "logicalOperator": "OR",
    "activeEntitiesCount": 3
  },
  ...
]
```

Getting Settings Policies Affecting an Entity

Referenced Endpoint: [Settings Policies \(on page 214\)](#)

This call returns an array of SettingsPolicyApiDTOs for all the Automation Policies that are effective for the given entity. Note that one entity can be in multiple groups, and so it can have policies that set different values for the same setting. In that case, the most conservative setting takes effect. The data returned by this call does not reflect which setting takes precedence in this case. The call merely reflects what you would see in the user interface.

Example: GET `https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073/settingspolicies`

Response: An array of SettingsPolicyApiDTOs that are effective for the entity.

```
[
  {
    "uuid": "_i-QuUGXUEemoItN1k8jw3Q",
    "displayName": "CUD_VM_AUTOMATION_POLICY",
    "entityType": "VirtualMachine",
    "scopes": [
      {
        "uuid": "_BZbFsWXUEemoItN1k8jw3Q",
        "displayName": "CUD_VM_Group",
        "groupType": "VirtualMachine",
        "isStatic": true,
        "logicalOperator": "AND"
      }
    ]
  },
  ...
]
```

```

"settingsManagers": [
  {
    "uuid": "automationmanager",
    "displayName": "Action Mode Settings",
    "category": "Automation",
    "settings": [
      {
        "uuid": "startVM",
        "displayName": "Start",
        "value": "MANUAL",
        "defaultValue": "RECOMMEND",
        "valueType": "STRING",
        "options": [
          {
            "label": "Disabled",
            "value": "DISABLED"
          },
          {
            "label": "Recommend",
            "value": "RECOMMEND"
          },
          {
            "label": "Manual",
            "value": "MANUAL"
          },
          {
            "label": "Automated",
            "value": "AUTOMATIC"
          }
        ],
        "entityType": "VirtualMachine",
        "sourceGroupName": "Global"
      }
    ]
  }
],
"disabled": false,
"readOnly": false,
"default": false
}
]

```

Getting Statistics of an Entity

Referenced Endpoint: [Stats \(on page 220\)](#)

Gets all statistics for the specified entity. This request takes the following parameters:

entity_uuid	The entity whose statistics will be returned.
q	Used internally by Workload Optimization Manager.

Example: GET <https://10.10.10.10/api/v3/entities/420b1eeb-6190-a9d2-6436-4327ad3ac073/stats>

Response: A list of StatSnapshotApiDTOs representing the current values of the statistics.

```

[
  {
    "displayName": "AdityaReplica",

```

```

"date": "2019-04-24T20:09:46-04:00",
"statistics": [
  {
    "name": "priceIndex",
    "relatedEntityType": "VirtualMachine",
    "values": {
      "max": 1.01,
      "min": 1.01,
      "avg": 1.01,
      "total": 1.01
    },
    "value": 1.01
  },
  {
    "displayName": "CPUProvisioned/AdityaReplica",
    "name": "CPUProvisioned",
    "capacity": {
      "max": 3120000,
      "min": 3120000,
      "avg": 3120000,
      "total": 3120000
    },
    "relatedEntityType": "VirtualMachine",
    "filters": [
      {
        "type": "relation",
        "value": "bought"
      }
    ],
    "units": "MHz",
    "values": {
      "max": 5200,
      "min": 5200,
      "avg": 5200,
      "total": 5200
    },
    "value": 5200
  },
  {
    "displayName": "Swapping/AdityaReplica",
    "name": "Swapping",
    "capacity": {
      "max": 40000000,
      "min": 40000000,
      "avg": 40000000,
      "total": 40000000
    },
    "relatedEntityType": "VirtualMachine",
    "filters": [
      {
        "type": "relation",
        "value": "bought"
      }
    ],
    "units": "bit/sec",
    "values": {
      "max": 0,
      "min": 0,
      "avg": 0,
      "total": 0
    },
    "value": 0
  },
  {
    "displayName": "NumDisk/AdityaReplica",

```

```

    "name": "NumDisk",
    "capacity": {
      "max": 2147483650,
      "min": 2147483650,
      "avg": 2147483650,
      "total": 2147483650
    },
    "relatedEntityType": "VirtualMachine",
    "filters": [
      {
        "type": "relation",
        "value": "bought"
      }
    ],
    "values": {
      "max": 1,
      "min": 1,
      "avg": 1,
      "total": 1
    },
    "value": 1
  },
  ...
]
}
]

```

Getting a Filtered List of Statistics for an Entity

Referenced Endpoint: [Stats \(on page 220\)](#)

Gets a list of statistics filtered by a user-created StatPeriodApiInputDTO. For more information about the criteria that make up the input for this request, see the Swagger documentation for this request, located at https://<Your_Workload_Optimization_Manager_IP>/swagger/external/index.html.

Example: POST <https://10.10.10.10/api/v3/entities/420b1eeb-6190-a9d2-6436-4327ad3ac073/stats>

Example Input: This input will return the values for the VMem, VCPU, and VStorage statistics of the specified entity, ordered first by key, then relatedEntity, then virtualDisk.

```

{
  "statistics": [
    {
      "name": "VMem",
      "groupBy": [
        "key",
        "relatedEntity",
        "virtualDisk"
      ]
    },
    {
      "name": "VCPU",
      "groupBy": [
        "key",
        "relatedEntity",
        "virtualDisk"
      ]
    },
    {
      "name": "VStorage",

```



```

    "groupBy": [
      "key",
      "relatedEntity",
      "virtualDisk"
    ]
  }
]
}

```

Response: An array of StatSnapshotApiDTOs representing the filtered statistics for the entity:

```

[
  {
    "displayName": "vEOS-4",
    "date": "2019-04-25T17:57:02-04:00",
    "statistics": [
      {
        "displayName": "vEOS-4",
        "name": "VCPU",
        "capacity": {
          "max": 2663,
          "min": 2663,
          "avg": 2663,
          "total": 2663
        },
        "relatedEntityType": "VirtualMachine",
        "filters": [
          {
            "type": "virtualDisk",
            "value": ""
          },
          {
            "type": "key",
            "value": null
          },
          {
            "type": "relation",
            "value": "sold"
          }
        ]
      },
      {
        "relatedEntity": {
          "uuid": "c0849b50a2cce61f57ea0e49e2199503e82f3f54",
          "displayName": "GuestLoad[vEOS-4]",
          "className": "Application"
        },
        "units": "MHz",
        "values": {
          "max": 143,
          "min": 91.47,
          "avg": 91.47,
          "total": 91.47
        },
        "value": 91.47
      },
      {
        "displayName": "vEOS-4",
        "name": "VMem",
        "capacity": {
          "max": 2097152,
          "min": 2097152,
          "avg": 2097152,
          "total": 2097152
        }
      }
    ]
  }
]

```

```

    },
    "relatedEntityType": "VirtualMachine",
    "filters": [
      {
        "type": "virtualDisk",
        "value": ""
      },
      {
        "type": "key",
        "value": null
      },
      {
        "type": "relation",
        "value": "sold"
      }
    ],
    "relatedEntity": {
      "uuid": "c0849b50a2cce61f57ea0e49e2199503e82f3f54",
      "displayName": "GuestLoad[vEOS-4]",
      "className": "Application"
    },
    "units": "KB",
    "values": {
      "max": 188740,
      "min": 130022,
      "avg": 130022,
      "total": 130022
    },
    "value": 130022
  }
]
}
]

```

Getting the Supply Chain of an Entity

Referenced Endpoint: [Supply Chains \(on page 237\)](#)

Workload Optimization Manager models your environment as a market of buyers and sellers. It maps the entities it discovers to a supply chain that represents the buy/sell relationships between these entities.

In the user interface, the default view on the Home Page shows the global supply chain. You can change scope to drill down to a supply chain for the relationships to a single entity. This is the same as the result when you get a supply chain for an entity via the API. The returned data is a `SupplyChainApiDTO` that expresses the scope for the passed entity.

The supply chain shows tiers of entity types, where `depth` indicates where in the supply chain levels a specific tier is. When you get a supply chain for an entity, the entity is at `depth = 0`. The depths for tiers above the entity are negative. For example, if a VM is at `depth = 0`, then the application that consumes from the VM would be at `depth = -1`. Likewise, providers to the VM would have positive depths. For example, storage that provides resources to the VM would have `depth = 1`, and a disk array that hosts the storage would have `depth = 2`.

The supply chain request takes the following parameters:

<code>entity_uuid</code>	The entity that sets the scope of the supply chain.
<code>types</code>	An array of strings for the entity types you want to include in the supply chain. If you leave this blank, the call returns the complete supply chain for this entity. If you specify any types, the returned supply chain contains only those types. Note that this rule also applies to the entity that sets the scope (<code>entity_uuid</code>) – If you do not include that entity's type, then the supply chain will not include that entity, even though it sets the scope of the request.

entity_states	<p>An array of strings. Limit the supply chain to include only entities in the given state. Entity states are:</p> <ul style="list-style-type: none"> ▪ ACTIVE: The entity is actively consuming resources ▪ EVACUATED: All consumers have been moved off of the entity, and it can be suspended or terminated ▪ FAILOVER: The entity is reserved for failover and will not participate in the market ▪ IDLE: The entity is powered off and not actively consuming market resources ▪ LAUNCH: The entity is starting up ▪ MAINTENANCE: The entity is in Maintenance mode ▪ NOT_MONITORED: Workload Optimization Manager does not currently monitor the entity ▪ QUEUED: More than ten actions are to be executed for a single target, and this entity has pending actions in the queue ▪ RESOURCE_ALLOCATION: For internal use ▪ RESOURCE_RELEASE: For internal use ▪ SUSPEND: The entity has been placed in Suspend mode ▪ SUSPEND_PENDING: The entity is making preparations to suspend, or is the next entity of its type to suspend ▪ TERMINATE_PENDING: The entity is making preparations to terminate, or is the next entity of its type to terminate ▪ UNKNOWN: Workload Optimization Manager is unable to obtain the current state of the entity
environment_type	<p>Limit the supply chain to a specific environment type. If you do not specify environment type, the supply chain includes all environments, which is the same as HYBRID. The environment types are:</p> <ul style="list-style-type: none"> ▪ HYBRID ▪ CLOUD ▪ ONPREM
detail_type	<p>The level of detail you want in your supply chain. Can be one of:</p> <ul style="list-style-type: none"> ▪ compact: Minimal detail about the supply chain items ▪ entity: The supply chain items include full entity descriptions ▪ aspects: The supply chain items also include aspects (meta data stored with the entity)
health	<p>Whether to include a health summary with the entities in the supply chain. <code>false</code> by default.</p>

Example: GET `https://10.10.10.10/api/v3/entities/420b1eeb-6190-a9d2-6436-4327ad3ac073/supplychains?types=VirtualMachine&types=Storage&types=DiskArray&detail_type=compact&health=true`

This example gets a supply chain for a VM entity, with the following settings: including the VM, storage, and disk arrays:

- Only include the VM, its storage, and the disk arrays
- Give compact details
- Show the entity health

Response: The `SupplyChainApiDTO` for the filtered request:

```

{
  "seMap": {
    "VirtualMachine": {
      "depth": 0,
      "entitiesCount": 1,
      "healthSummary": {
        "Normal": 1
      },
      "stateSummary": {
        "ACTIVE": 1
      },
      "connectedProviderTypes": [
        "PhysicalMachine",
        "Storage",
        "VirtualDataCenter"
      ],
      "connectedConsumerTypes": [
        "Application"
      ],
      "instances": {
        "420bleeb-6190-a9d2-6436-4327ad3ac073": {
          "links": [
            {
              "rel": "self",
              "href":
"https://10.10.10.10/api/v3/entities/420bleeb-6190-a9d2-6436-4327ad3ac073?include_aspects=false"
            }
          ],
          "uuid": "420bleeb-6190-a9d2-6436-4327ad3ac073",
          "displayName": "vEOS-4",
          "className": "VirtualMachine",
          "priceIndex": 1.1463195,
          "state": "ACTIVE",
          "severity": "Normal",
          "discoveredBy": {
            "uuid": "_FJwg0EzHEemaXZFq0lsC0g",
            "displayName": "vsphere-dc11.dev.mycorp.com",
            "type": "vCenter"
          },
          "remoteId": "vm-100",
          "environmentType": "ONPREM"
        }
      }
    },
    "Storage": {
      "depth": 1,
      "entitiesCount": 2,
      "healthSummary": {
        "Normal": 2
      },
      "stateSummary": {
        "ACTIVE": 2
      },
      "connectedProviderTypes": [
        "DiskArray"
      ],
      "connectedConsumerTypes": [
        "PhysicalMachine",
        "VirtualMachine"
      ],
      "instances": {
        "5a822e24-584bce98-ecb2-441ea15e2534": {
          "links": [
            {
              "rel": "self",

```

```

    "href":
"https://10.10.10.10/api/v3/entities/5a822e24-584bce98-ecb2-441ea15e2534?include_aspects=false"
  }
],
  "uuid": "5a822e24-584bce98-ecb2-441ea15e2534",
  "displayName": "SCIO:ESXDC11DS2",
  "className": "Storage",
  "priceIndex": 1.2797012,
  "state": "ACTIVE",
  "severity": "Normal",
  "discoveredBy": {
    "uuid": "_FJwg0EzHEemaXZFq0lsC0g",
    "displayName": "vsphere-dc11.dev.mycorp.com",
    "type": "vCenter"
  },
  "remoteId": "datastore-2357",
  "environmentType": "ONPREM",
  "tags": {
    "Datastore_DC11": [
      "True"
    ]
  }
},
"9bd4ee88-99c64661": {
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/entities/9bd4ee88-99c64661?include_aspects=false"
    }
  ],
  "uuid": "9bd4ee88-99c64661",
  "displayName": "QS1:NFSShare",
  "className": "Storage",
  "priceIndex": 20000,
  "state": "ACTIVE",
  "severity": "Normal",
  "discoveredBy": {
    "uuid": "_gOQEYEaREemB8r4uTzazvA",
    "displayName": "vsphere-dc5.dev.mycorp.com",
    "type": "vCenter"
  },
  "remoteId": "datastore-1411",
  "environmentType": "ONPREM",
  "tags": {
    "DimStor": [
      "DimStorTag"
    ],
    "Datastore_DC11": [
      "True"
    ],
    "Test_Tag": [
      "MyStorageTag"
    ]
  }
}
},
"DiskArray": {
  "depth": 2,
  "entitiesCount": 2,
  "healthSummary": {
    "Normal": 2
  },
  "stateSummary": {
    "ACTIVE": 2
  }
}

```


Response: A TagApiDTO for the passed entity. This gives an array of key/value pairs, where the value is an array of strings.

```
[
  {
    "key": "Datastore_DC11",
    "values": [
      "True"
    ]
  },
  {
    "key": "Test_Tag",
    "values": [
      "MyStorageTag"
    ]
  },
  {
    "key": "DimStor",
    "values": [
      "DimStorTag"
    ]
  }
]
```

Groups Endpoint

A group is a collection of entities (such as physical machines, containers, clusters, or even other groups) that Workload Optimization Manager can work with as a unit. The most common use of groups is to set scope for display in charts or for processing in plans, and to retrieve statistics for a subset of your environment.

This endpoint contains references to start and end times for certain operations. For more information, including valid time formats, see [Time in the Workload Optimization Manager API \(on page 17\)](#)

Using the groups endpoint of the Workload Optimization Manager API, you can:

- Get a list of all groups on your Workload Optimization Manager appliance
- Create a group
- Edit a group
- Delete a group
- Get a list of actions for a specified groups
- Get a list of entities in a specified group
- Get parent groups of a specified group
- Get a list of members of a specified group
- Get a list of notifications for a specified group
- Get a list of settings for a specified group
- Get a list of policies for a specified group
- Get statistics for a specified group
- Get the supply chain related to a specified group
- Get the tags belonging to a specified group

Group Types and Class Names

Workload Optimization Manager subdivides the entities on your appliance by the following group class name, to aid in both searching and understanding the purpose of a group:

Class Name	Description
Folder	These appear in the user interface as folders, and are for visual organization. Discovered folders represent the folder structure in the target – for example, the vCenter folder structure. In addition, Workload Optimization Manager discovers vCenter Server resource pools, and groups them into folders.
Group	Workload Optimization Manager places discovered entities into standard groups, and users can create groups of their own with static or dynamic membership.
RefGroup	A RefGroup can be a group of groups- for example, a group of PM cluster groups that make up a hypervisor target- or a group defined by a relationship. For example, the built-in group <code>PMsByDatacenter</code> is a RefGroup reflecting the relationship between the datacenters and hosts.
Cluster / StorageCluster	Groups that correspond to discovered clusters.
DiscoveredGroup	Groups that are defined by a target service. For example, Workload Optimization Manager can discover DRS domains that were defined in vCenter Server.
MarketGroup	A group that is based on the infrastructure cost of that entity type. These groups are based on the Infrastructure Cost settings in the Workload Optimization Manager policies.
StaticMetaGroup / RefMetaGroup / MetaGroup	Groups used internally by Workload Optimization Manager. These should not be modified in any way.

In addition, each group has a `groupType` that identifies the type of members that group contains. Remember that when you create a group in the user interface or via the API, you cannot add more than one type of member. The different group types include:

Group Type	Description
Cluster	A group of clusters. For example, you could create a group of all PM clusters that include the name "Development".
ServiceEntity	An internal group type reserved for groups that Workload Optimization Manager discovers or creates. Note that the group will still contain members of only one type.
Entity Type	<ul style="list-style-type: none"> ▪ APPLICATION ▪ APPLICATION_SERVER ▪ BUSINESS_ACCOUNT ▪ BUSINESS_UNIT ▪ CHASSIS ▪ CLOUD_SERVICE ▪ CONTAINER ▪ CONTAINER_POD ▪ DATABASE ▪ DATABASE_SERVER ▪ DATACENTER

Group Type	Description
	<ul style="list-style-type: none"> ▪ DISK_ARRAY ▪ DPOD ▪ IO_MODULE ▪ LOAD_BALANCER ▪ LOGICAL_POOL ▪ NETWORK ▪ PHYSICAL_MACHINE ▪ STORAGE ▪ STORAGE_CONTROLLER ▪ SWITCH ▪ VIRTUAL_APPLICATION ▪ VIRTUAL_DATACENTER ▪ VIRTUAL_MACHINE ▪ VPOD

Understanding the different group types helps you find the group you want. If you know the name of a specific group, then you can filter the returned list for a group of that name. Or if you want to step through all the clusters Workload Optimization Manager has discovered, you can filter all the entries with a `className` of `Cluster` or `StorageCluster`.

Group Filter Types

Workload Optimization Manager utilizes regex and a `filterType` to build a group. The `filterType` is the criterion to which the regex will match. For example, a `filterType` of `pmsByName` will apply the regex to the display names of physical machines.

The available options for this parameter depend on the entity making up your group:

Entity	filterType Options
VirtualMachine	<ul style="list-style-type: none"> ▪ vmsByName ▪ vmsByPMName ▪ vmsByStorage ▪ vmsByNetwork ▪ vmsByApplication ▪ vmsByDatabaseServer ▪ vmsByDatabaseServerVersion ▪ vmsByDC ▪ vmsByVDC ▪ vmsByDCnested ▪ vmsByNumCPUs ▪ vmsByMem ▪ vmsByGuestName ▪ vmsByAltName ▪ vmsByClusterName ▪ vmsByDiskArrayName ▪ vmsByLogicalPoolName ▪ vmsByTag

Entity	filterType Options
	<ul style="list-style-type: none"> ▪ vmsByState ▪ vmsByBusinessAccountUuid ▪ vmsByResourceGroupUuid
VirtualDataCenter	<ul style="list-style-type: none"> ▪ vdcByState ▪ vdcByName ▪ vdcByVDCName ▪ vdcByTag ▪ vdcByState
PhysicalMachine	<ul style="list-style-type: none"> ▪ pmsByName ▪ pmsByStorage ▪ pmsByNetwork ▪ pmsBySwitch ▪ pmsByNumVms ▪ pmsByDC ▪ pmsByMem ▪ pmsByNumCPUs ▪ pmsByVendorName ▪ pmsByCPUModel ▪ pmsByModel ▪ pmsByTimezone ▪ pmsByClusterName ▪ pmsByTag ▪ pmsByState
Storage	<ul style="list-style-type: none"> ▪ storageByName ▪ storageByTag ▪ storageByVMs ▪ storageByDC ▪ storageByPMCluster ▪ storageByState ▪ volumeByDeletable
Application Component	<ul style="list-style-type: none"> ▪ appSrvsByName ▪ appsByName
WebServer	<ul style="list-style-type: none"> ▪ wbSrvsByName
BusinessApplication	<ul style="list-style-type: none"> ▪ busAppsByName
Database	<ul style="list-style-type: none"> ▪ databaseByName ▪ databaseByTag ▪ databaseByBusinessAccountUuid ▪ databaseByResourceGroupUuid
DatabaseServer	<ul style="list-style-type: none"> ▪ databaseServerByName ▪ databaseServerByTag ▪ databaseServerByBusinessAccountUuid ▪ databaseServerByEngine

Entity	filterType Options
	<ul style="list-style-type: none"> ▪ databaseServerByEdition ▪ databaseServerByVersion
VirtualApplication	<ul style="list-style-type: none"> ▪ vappsByName
Cluster	<ul style="list-style-type: none"> ▪ clustersByName ▪ clustersByTag
DataCenter	<ul style="list-style-type: none"> ▪ datacentersByName ▪ datacentersByTag
Group	<ul style="list-style-type: none"> ▪ groupsByName
StorageCluster	<ul style="list-style-type: none"> ▪ storageClustersByName
DiskArray	<ul style="list-style-type: none"> ▪ diskarrayByName
Zone	<ul style="list-style-type: none"> ▪ zonsByName
Region	<ul style="list-style-type: none"> ▪ regsByName
Network	<ul style="list-style-type: none"> ▪ netsByName
LoadBalancer	<ul style="list-style-type: none"> ▪ lbsByName
Chassis	<ul style="list-style-type: none"> ▪ chasByName
StorageController	<ul style="list-style-type: none"> ▪ storagecontrollerByName
DPod	<ul style="list-style-type: none"> ▪ dpodByName
VPod	<ul style="list-style-type: none"> ▪ vpodByName
LogicalPool	<ul style="list-style-type: none"> ▪ logicalPoolByName
Switch	<ul style="list-style-type: none"> ▪ switchByName
Container	<ul style="list-style-type: none"> ▪ containersByName ▪ containersByPodName ▪ containersByVMName ▪ containersByNamespace ▪ containerSpecsByName
ContainerPod	<ul style="list-style-type: none"> ▪ containerPodsByName ▪ containerPodsByNamespace ▪ containerPodsByVMName

Entity	filterType Options
ServiceEntity	<p>NOTE: Groups of type <code>ServiceEntity</code> are the only groups that have multiple entity types, and are used exclusively for cloud targets.</p> <ul style="list-style-type: none"> ▪ <code>workloadByBusinessAccountUuid</code> ▪ <code>workloadByResourceGroupUuid</code>
Workload	<ul style="list-style-type: none"> ▪ <code>workloadByBusinessAccountUuid</code> ▪ <code>workloadByResourceGroupUuid</code> ▪ <code>workloadControllersByName</code> ▪ <code>workloadControllersByNamespace</code> ▪ <code>workloadControllersByKind</code> ▪ <code>ResourceGroup</code> ▪ <code>resourceGroupByName</code> ▪ <code>resourceGroupByUuid</code> ▪ <code>resourceGroupByBusinessAccountUuid</code>
BusinessAccount	<ul style="list-style-type: none"> ▪ <code>businessAccountByName</code> ▪ <code>businessAccountByUuid</code> ▪ <code>subBusinessAccountOfUuid</code> ▪ <code>businessAccountValidationStatus</code> ▪ <code>businessAccountTargetName</code> ▪ <code>businessAccountCloudProvider</code>
BillingFamily	<ul style="list-style-type: none"> ▪ <code>billingFamilyByName</code>
ViewPod	<ul style="list-style-type: none"> ▪ <code>viewPodByName</code>
DesktopPool	<ul style="list-style-type: none"> ▪ <code>desktopPoolByName</code> ▪ <code>desktopPoolByViewPod</code>
BusinessUser	<ul style="list-style-type: none"> ▪ <code>businessUserByDesktopPool</code> ▪ <code>businessUserByName</code> ▪ <code>businessUserByViewPod</code>
Cloud-Specific Filters	<ul style="list-style-type: none"> ▪ <code>computeTiersByName</code> ▪ <code>computeTiersByMem</code> ▪ <code>databaseTiersByName</code> ▪ <code>databaseTiersByDBMem</code> ▪ <code>databaseServerTiersByName</code> ▪ <code>databaseServerTiersByVMem</code>

Note that in the case of a discovered resource group, group members can be discovered by multiple targets. In that case, the Workload Optimization Manager API returns a single target for the group.

Groups Requests

Pagination for Group Requests

When you request group data, the API uses pagination to return subsets of the data. You should always use pagination when available to make sure you get your data in manageable chunks. To paginate returned data, the `limit`, `orderBy`, and `cursor` parameters control how the APIs paginate their data. If you do not specify a `limit` for the following requests, the API will paginate the data to a default limit of records:

- GET `/groups`
- GET `/groups/<groupId>/members`
- GET `/groups/<groupId>/entities`

If your scripts make these requests without setting a limit, you should be sure they check for a pagination cursor in the returned data.

For general information about pagination, see [Pagination in the Workload Optimization Manager API \(on page 18\)](#).

Getting a List of Groups

Gets a list of all groups on your Workload Optimization Manager appliance. This will include Workload Optimization Manager internal and default groups, as well as any groups discovered from your targets, in addition to your custom groups.

Example: GET `https://10.10.10.10/api/v3/groups`

Response: A list of `GroupApiDTO`s representing the groups on your appliance.

```
[
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/groups/_S4k98SFQEd-S4dn3K4_SSA?include_aspects=false"
      }
    ],
    "uuid": "_S4k98SFQEd-S4dn3K4_SSA",
    "displayName": "Datacenters",
    "className": "Group",
    "environmentType": "ONPREM",
    "entitiesCount": 12,
    "membersCount": 12,
    "groupType": "DataCenter",
    "severity": "Critical",
    "isStatic": false,
    "logicalOperator": "AND",
    "activeEntitiesCount": 44
  },
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/groups/_S4k94SFQEd-S4dn3K4_SSA?include_aspects=false"
      }
    ],
    "uuid": "_S4k94SFQEd-S4dn3K4_SSA",
    "displayName": "Chassis",
    "className": "Group",
    "environmentType": "ONPREM",
    "entitiesCount": 2,
    "membersCount": 1,
  }
]
```

```

"groupType": "Chassis",
"severity": "Normal",
"isStatic": false,
"logicalOperator": "AND",
"activeEntitiesCount": 2
},
...
]

```

Creating a Group

In order to create a group in Workload Optimization Manager, provide a GroupApiDTO with a `groupType` and `isStatic`.

For a dynamic group (`isStatic = false`), you also include the `criteriaList` information:

<code>caseSensitive</code>	If <code>true</code> , the regex will be evaluated as case-sensitive.
<code>expType</code>	For strings, the allowable values are <code>EQ</code> and <code>NEQ</code> (Equals, Does Not Equal). For integers, you may additionally use <code>GT</code> , <code>LT</code> , <code>GTE</code> , <code>LTE</code> (Greater than, less than, greater than or equal to, and less than or equal to, respectively).
<code>expVal</code>	The value of the regular expression.
<code>filterType</code>	See Group Filter Types for a full list of available options

For a static group:

- Provide UUIDs for each entity that is a member of the group in the `memberUuidList`
- DO NOT provide any `criteriaList` parameters

Example: POST `https://10.10.10.10/api/v3/groups/`

Example input, showing the creation of a dynamic group of VMs whose names start with "AJ":

```

{
  "isStatic": false,
  "displayName": "Dallas-Dynamic",
  "memberUuidList": [],
  "criteriaList": [
    {
      "expType": "EQ",
      "expVal": "AJ.*",
      "filterType": "vmsByName",
      "caseSensitive": false
    }
  ],
  "groupType": "VirtualMachine"
}

```

Response:

```

{
  "uuid": "_4L0PcE9SEemD69d9a0uLJQ",
  "displayName": "Dallas-Dynamic",
  "className": "Group",
  "environmentType": "ONPREM",
  "entitiesCount": 1,
  "membersCount": 1,
  "groupType": "VirtualMachine",
}

```

```

"severity": "Major",
"isStatic": false,
"logicalOperator": "AND",
"criteriaList": [
  {
    "expVal": "AJ.*",
    "expType": "EQ",
    "filterType": "vmsByName",
    "caseSensitive": false
  }
],
"activeEntitiesCount": 1
}

```

Example input, showing the creation of a static group of Hosts:

```

{
  "isStatic": true,
  "displayName": "Dallas-Static",
  "memberUuidList": [
    "4C4C4544-0042-5A10-804A-B1C04F384331",
    "4C4C4544-004A-3610-8057-C8C04F464331",
    "Virtual_ESX_42381e13-4256-64bb-f554-d17798ddb2ba"
  ],
  "criteriaList": [],
  "groupType": "PhysicalMachine"
}

```

Response:

```

{
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/groups/_vn_u0FJ0EemD69d9a0uLJQ?include_aspects=false"
    }
  ],
  "uuid": "_vn_u0FJ0EemD69d9a0uLJQ",
  "displayName": "Dallas-Static",
  "className": "Group",
  "environmentType": "ONPREM",
  "entitiesCount": 3,
  "membersCount": 3,
  "groupType": "PhysicalMachine",
  "severity": "Critical",
  "isStatic": true,
  "logicalOperator": "OR",
  "activeEntitiesCount": 3
}

```

Editing a Group

In order to edit a user-created group, send the complete GroupApiDTO with your changes as the input to this request.

Example: PUT https://10.10.10.10/api/v3/groups/_Y6BL4FDQEemD69d9a0uLJQ

Example Input: A modified GroupApiDTO. In this case, the expVal parameter has been modified.

```

{
  "isStatic": false,

```

```

"displayName": "Dallas-Host",
"memberUuidList": [],
"criteriaList": [
  {
    "expType": "EQ",
    "expVal": "hp*change",
    "filterType": "pmsByName",
    "caseSensitive": false
  }
],
"groupType": "PhysicalMachine",
"logicalOperator": "AND"
}

```

Response: The full GroupApiDTO reflecting your changes:

```

{
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/groups/_Y6BL4FDQEemD69d9a0uLJQ?include_aspects=false"
    }
  ],
  "uuid": "_Y6BL4FDQEemD69d9a0uLJQ",
  "displayName": "Dallas-Host",
  "className": "Group",
  "environmentType": "ONPREM",
  "entitiesCount": 0,
  "membersCount": 0,
  "groupType": "PhysicalMachine",
  "severity": "Normal",
  "isStatic": false,
  "logicalOperator": "AND",
  "criteriaList": [
    {
      "expVal": "hp*change",
      "expType": "EQ",
      "filterType": "pmsByName",
      "caseSensitive": false
    }
  ],
  "activeEntitiesCount": 0
}

```

Deleting a Group

To delete a user-created group, pass the UUID of the group in the URL of the request.

Example: DELETE https://10.10.10.10/api/v3/groups/_vn_u0FJ0EemD69d9a0uLJQ

Response: A response of 200 indicates successful deletion.

Getting Actions Related to a Group

Referenced Endpoint: [Actions \(on page 29\)](#)

Gets a list of actions relating to the entities in the specified group. To get a single action, include the UUID of the action in the request. This request takes the following parameters:

group_Uuid	The UUID of the group whose actions will be returned.
------------	---

cursor	When making subsequent calls to retrieve additional results, this is the cursor returned by the last call to this method.
limit	The maximum number of items to return. Must be a positive integer. If not set, the server will provide a default (20).
order_by	The field to order the results by. [creation_date, name, risk_category, savings, severity].
ascending	Default: true. When false, results will be in descending order.

Examples:

All actions: GET https://10.10.10.10/api/v3/groups/421dd4ce-a4c1-231a-71e7-64fbf598bc65/actions?limit=50&order_by=creation_date&ascending=true

Single action: GET https://10.10.10.10/api/v3/groups/421dd4ce-a4c1-231a-71e7-64fbf598bc65/actions/_pJg98EQaEemD69d9a0uLJQ

Response: A list of ActionApiDTOs related to the specified group:

```
[
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/actions/_pJg98EQaEemD69d9a0uLJQ"
      },
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/actions/2500817580000"
      }
    ],
    "uuid": "_pJg98EQaEemD69d9a0uLJQ",
    "createTime": "2019-03-11T12:28:03-04:00",
    "actionType": "RIGHT_SIZE",
    "actionState": "PENDING_ACCEPT",
    "actionMode": "MANUAL",
    "details": "Scale down Memory reservation for Virtual Machine 'AJ_Test' from 2 GB to 1 GB",
    "importance": 0,
    "target": {
      "uuid": "421dd4ce-a4c1-231a-71e7-64fbf598bc65",
      "displayName": "AJ_Test",
      "className": "VirtualMachine",
      "aspects": {
        "virtualMachineAspect": {
          "os": "CentOS 4/5/6/7 (64-bit)",
          "ip": [
            "10.10.10.107"
          ],
          "connectedNetworks": [
            {
              "uuid": "34f9f5364cd843aa1fe99900621ee3b51a7dc6e5",
              "displayName": "VM Network"
            }
          ],
          "numVCPUs": 1,
          "ebsOptimized": false
        }
      },
      "environmentType": "ONPREM"
    },
    "currentEntity": {
      "uuid": "_pJlPYUQaEemD69d9a0uLJQ",
```

```

    "className": "Mem"
  },
  "newEntity": {
    "uuid": "_pLCA40QaEemD69d9a0uLJQ",
    "className": "Mem",
    "aspects": {
      "virtualMachineAspect": {
        "os": "Linux (Free)",
        "ebsOptimized": false
      }
    }
  },
  "currentValue": "2097152.0",
  "newValue": "1048576.0",
  "resizeToValue": "1048576.0",
  "risk": {
    "uuid": "_pL_qMEQaEemD69d9a0uLJQ",
    "subCategory": "Efficiency Improvement",
    "description": "Underutilized Memory reservation",
    "severity": "MINOR",
    "importance": 0
  },
  "currentLocation": {
    "uuid": "cdcd967d1e08d20936c3aa9a0879c635214c79ee",
    "displayName": "ACM",
    "className": "DataCenter"
  },
  "newLocation": {
    "uuid": "cdcd967d1e08d20936c3aa9a0879c635214c79ee",
    "displayName": "ACM",
    "className": "DataCenter"
  },
  "actionID": 2500817580000
},
{
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/actions/_XdP4EEQ8EemD69d9a0uLJQ"
    },
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/actions/2501049335840"
    }
  ],
  "uuid": "_XdP4EEQ8EemD69d9a0uLJQ",
  "createTime": "2019-03-11T16:29:28-04:00",
  "actionType": "RIGHT_SIZE",
  "actionState": "PENDING_ACCEPT",
  "actionMode": "MANUAL",
  "details": "Remove VMem limit for VirtualMachine AJ_Test to maximize efficiency",
  "importance": 0,
  "target": {
    "uuid": "421dd4ce-a4c1-231a-71e7-64fbf598bc65",
    "displayName": "AJ_Test",
    "className": "VirtualMachine",
    "aspects": {
      "virtualMachineAspect": {
        "os": "CentOS 4/5/6/7 (64-bit)",
        "ip": [
          "10.10.10.107"
        ],
        "connectedNetworks": [
          {
            "uuid": "34f9f5364cd843aa1fe99900621ee3b51a7dc6e5",

```

```

    "displayName": "VM Network"
  }
],
"numVCPUs": 1,
"ebsOptimized": false
},
},
"environmentType": "ONPREM"
},
"currentEntity": {
  "uuid": "_XdP4EkQ8EemD69d9a0uLJQ",
  "className": "VMem"
},
"newEntity": {
  "uuid": "_Xnq_YUQ8EemD69d9a0uLJQ",
  "className": "VMem",
  "aspects": {
    "virtualMachineAspect": {
      "os": "Linux (Free)",
      "ebsOptimized": false
    }
  }
},
"currentValue": "2097152.0",
"newValue": "0.0",
"resizeToValue": "0.0",
"risk": {
  "uuid": "_XnuCsUQ8EemD69d9a0uLJQ",
  "subCategory": "Efficiency Improvement",
  "description": "VMem congestion in Virtual Machine 'AJ_Test'",
  "severity": "MAJOR",
  "reasonCommodity": "VMem",
  "importance": 0
},
"currentLocation": {
  "uuid": "cdcd967d1e08d20936c3aa9a0879c635214c79ee",
  "displayName": "ACM",
  "className": "DataCenter"
},
"newLocation": {
  "uuid": "cdcd967d1e08d20936c3aa9a0879c635214c79ee",
  "displayName": "ACM",
  "className": "DataCenter"
},
"actionID": 2501049335840
}
]

```

Getting the Entities in a Group

Referenced Endpoint: [Entities \(on page 59\)](#)

Gets all entities contained within a group.

NOTE: This request will not return the contents of nested groups. In order to see groups of groups, use the `groups/members` request.

Example: GET `https://10.10.10.10/api/v3/groups/_4L0PcE9SEemD69d9a0uLJQ/entities`

Response: A list of EntityApiDTOs representing the entities in the specified group.

```
[
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/actions/_pJg98EQaEemD69d9a0uLJQ"
      },
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/actions/2500817580000"
      }
    ],
    "uuid": "_pJg98EQaEemD69d9a0uLJQ",
    "createTime": "2019-03-11T12:28:03-04:00",
    "actionType": "RIGHT_SIZE",
    "actionState": "PENDING_ACCEPT",
    "actionMode": "MANUAL",
    "details": "Scale down Memory reservation for Virtual Machine 'AJ_Test' from 2 GB to 1 GB",
    "importance": 0,
    "target": {
      "uuid": "421dd4ce-a4c1-231a-71e7-64fbf598bc65",
      "displayName": "AJ_Test",
      "className": "VirtualMachine",
      "aspects": {
        "virtualMachineAspect": {
          "os": "CentOS 4/5/6/7 (64-bit)",
          "ip": [
            "10.10.10.107"
          ],
          "connectedNetworks": [
            {
              "uuid": "34f9f5364cd843aa1fe99900621ee3b51a7dc6e5",
              "displayName": "VM Network"
            }
          ],
          "numVCPUs": 1,
          "ebsOptimized": false
        }
      },
      "environmentType": "ONPREM"
    },
    "currentEntity": {
      "uuid": "_pJlPYUQaEemD69d9a0uLJQ",
      "className": "Mem"
    },
    "newEntity": {
      "uuid": "_pLCA40QaEemD69d9a0uLJQ",
      "className": "Mem",
      "aspects": {
        "virtualMachineAspect": {
          "os": "Linux (Free)",
          "ebsOptimized": false
        }
      }
    },
    "currentValue": "2097152.0",
    "newValue": "1048576.0",
    "resizeToValue": "1048576.0",
    "risk": {
      "uuid": "_pL_qMEQaEemD69d9a0uLJQ",
      "subCategory": "Efficiency Improvement",
      "description": "Underutilized Memory reservation",
      "severity": "MINOR",
      "importance": 0
    }
  },
]
```

```

"currentLocation": {
  "uuid": "cdcd967d1e08d20936c3aa9a0879c635214c79ee",
  "displayName": "ACM",
  "className": "DataCenter"
},
"newLocation": {
  "uuid": "cdcd967d1e08d20936c3aa9a0879c635214c79ee",
  "displayName": "ACM",
  "className": "DataCenter"
},
"actionID": 2500817580000
}
]

```

Getting the Parent Groups of a Group

For a specified group, gets any group that the specified group belongs to.

NOTE: Workload Optimization Manager contains a default parent group for user-created groups called "My Groups". This group should not be modified or deleted.

This request takes the following parameters:

group_Uuid	The UUID of the group whose actions will be returned.
path	Default: false. When true, this request returns the parent group, along with any groups traversed to obtain the parent group. For groups that are not nested, this returns the group whose ID you entered and its parent group.

Example: GET https://10.10.10.10/api/v3/groups/_4L0PcE9SEemD69d9a0uLJQ/groups?path=true

Response: A list of GroupApiDTOs representing the group and parent group.

```

[
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/groups/_S4k68yFvEd-S4dn3T4_SSA?include_aspects=false"
      }
    ],
    "uuid": "_S4k68yFvEd-S4dn3T4_SSA",
    "displayName": "My Groups",
    "className": "Group",
    "environmentType": "ONPREM",
    "entitiesCount": 1,
    "membersCount": 3,
    "groupType": "ServiceEntity",
    "severity": "Major",
    "isStatic": false,
    "logicalOperator": "AND",
    "activeEntitiesCount": 1
  },
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/groups/_4L0PcE9SEemD69d9a0uLJQ?include_aspects=false"
      }
    ],
  }
]

```

```

"uuid": "_4L0PcE9SEemD69d9a0uLJQ",
"displayName": "Dallas-Dynamic",
"className": "Group",
"environmentType": "ONPREM",
"entitiesCount": 1,
"membersCount": 1,
"groupType": "VirtualMachine",
"severity": "Major",
"isStatic": false,
"logicalOperator": "AND",
"criteriaList": [
  {
    "expVal": "AJ.*",
    "expType": "EQ",
    "filterType": "vmsByName",
    "caseSensitive": false
  }
],
"activeEntitiesCount": 1
}
]

```

Getting the Members of a Group

Referenced Endpoint: [Entities \(on page 59\)](#)

Gets all members of a group.

NOTE: This request returns nested groups and the member entities of each. To get only the *entities* in the specified group, use the `groups/entities` request.

Example: GET `https://10.10.10.10/api/v3/groups/_4L0PcE9SEemD69d9a0uLJQ/members`

Response: A list of `serviceEntityApiDTOs` representing the members of the group:

```

[
  {
    "links": [
      {
        "rel": "self",
        "href":
"https://10.10.10.10/api/v3/entities/183b37c68211668aecd36eadcdce9110ebc58f85?include_aspects=false"
      }
    ],
    "uuid": "183b37c68211668aecd36eadcdce9110ebc58f85",
    "displayName": "Olga",
    "className": "VirtualDataCenter",
    "priceIndex": 1,
    "state": "ACTIVE",
    "severity": "Normal",
    "discoveredBy": {
      "uuid": "_h3Km4Bs3EemMFrqlXNilyQ",
      "displayName": "vsphere-dc23.corp.vmturbo.com",
      "type": "vCenter"
    },
    "remoteId": "resgroup-96",
    "environmentType": "ONPREM"
  },
  {
    "links": [
      {
        "rel": "self",

```

```

    "href":
"https://10.10.10.10/api/v3/entities/2332ba0f9dc14c07f11adb38e12df43c4bc8ca56?include_aspects=false"
  }
],
"uuid": "2332ba0f9dc14c07f11adb38e12df43c4bc8ca56",
"displayname": "olga_do_not_touch_1",
"classname": "VirtualDataCenter",
"priceindex": 1,
"state": "ACTIVE",
"severity": "Normal",
"discoveredby": {
  "uuid": "_5kMqwNlnEeiJs9KWCzOdUQ",
  "displayname": "vsphere-dc1.dev.mycorp.com",
  "type": "vCenter"
},
"remoteid": "resgroup-1088",
"environmenttype": "ONPREM"
},
{
  "links": [
    {
      "rel": "self",
      "href":
"https://10.10.10.10/api/v3/entities/6668eb0940bf970d24eb13279b31a52f3c44a91f?include_aspects=false"
    }
  ],
  "uuid": "6668eb0940bf970d24eb13279b31a52f3c44a91f",
  "displayname": "Gilad",
  "classname": "VirtualDataCenter",
  "priceindex": 1,
  "state": "ACTIVE",
  "severity": "Normal",
  "discoveredby": {
    "uuid": "_lj_tkH39EeiKy53b3GBglA",
    "displayname": "vsphere-dc5.dev.mycorp.com",
    "type": "vCenter"
  },
  "remoteid": "resgroup-1953",
  "environmenttype": "ONPREM"
},
{
  "links": [
    {
      "rel": "self",
      "href":
"https://10.10.10.10/api/v3/entities/20b9e0acf4c6f7d5b00f744d1dc954616095f1f2?include_aspects=false"
    }
  ],
  "uuid": "20b9e0acf4c6f7d5b00f744d1dc954616095f1f2",
  "displayname": "ACM",
  "classname": "VirtualDataCenter",
  "priceindex": 1,
  "state": "ACTIVE",
  "severity": "Normal",
  "discoveredby": {
    "uuid": "_lj_tkH39EeiKy53b3GBglA",
    "displayname": "vsphere-dc5.dev.mycorp.com",
    "type": "vCenter"
  },
  "remoteid": "resgroup-v1946",
  "environmenttype": "ONPREM"
},
{
  "links": [

```

```

    "rel": "self",
    "href":
"https://10.10.10.10/api/v3/entities/56e6cfd2bc88ef5675df9dc3e06796ceb8b6e301?include_aspects=false"
  }
],
"uuid": "56e6cfd2bc88ef5675df9dc3e06796ceb8b6e301",
"displayName": "olga_do_not_touch_7",
"className": "VirtualDataCenter",
"priceIndex": 1,
"state": "ACTIVE",
"severity": "Normal",
"discoveredBy": {
  "uuid": "_GRNtoNu0Eeilt9UDtI29QA",
  "displayName": "vsphere-dc7.dev.mycorp.com",
  "type": "vCenter"
},
"remoteId": "resgroup-1066",
"environmentType": "ONPREM"
}
]

```

Getting Settings of a Group

Referenced Endpoint: [Settings \(on page 210\)](#)

Gets both global and user-modified settings for the specified group. To get a single setting, pass the setting UUID as part of the request URL. This request takes the following parameters:

group_Uuid	The Uuid of the group whose settings will be returned
include_settingspolicies	Default: false. When true, returns the settings policies affecting the specified group, in addition to the settings.

Example: GET https://10.10.10.10/api/v3/groups/_WvaGkOBjEeierZ9blbxmvgg/settings?include_settingspolicies=false

Response: A list of SettingsManagerApiDTOs representing the settings, or settings and settings policies for the specified group:

```

[
  {
    "uuid": "appsettingsmanager",
    "displayName": "Application Discovery",
    "category": "AppDiscovery",
    "settings": [
      {
        "uuid": "Username",
        "displayName": "Username",
        "value": "",
        "defaultValue": "",
        "valueType": "STRING",
        "entityType": "VirtualMachine",
        "sourceGroupName": "Global"
      },
      {
        "uuid": "Password",
        "displayName": "Password",
        "value": "",
        "defaultValue": "",
        "valueType": "STRING",
        "entityType": "VirtualMachine",
        "sourceGroupName": "Global"
      }
    ]
  }
]

```



```

    },
    ...
  },
  {
    "uuid": "controlmanager",
    "displayName": "Action Workflow",
    "category": "Automation",
    "settings": [
      {
        "uuid": "moveVMWorkflow",
        "displayName": "Move Workflow",
        "value": "",
        "defaultValue": "",
        "valueType": "STRING",
        "entityType": "VirtualMachine",
        "sourceGroupName": "Global"
      }
    ]
  }
  ...
}

```

Editing a Specified Setting of a Group

Referenced Endpoint: [Settings \(on page 210\)](#)

Edits a specified setting for the specified group. This request takes the following parameters:

group_Uuid	The Uuid of the group whose setting will be edited
settingsManager_Uuid	The Uuid of the settings manager whose setting will be edited
setting_Uuid	The Uuid of the setting to change

Example: PUT https://10.10.10.10/api/v3/groups/_WvaGkOBjEeierZ9blbxmgg/settings/appsettingsmanager/Retry_Interval

Example Input:

The new value for the setting:

```

{
  "value": "61"
}

```

Response: A ServiceEntityApiDTO representing the specified setting, with your changed value(s):

```

{
  "uuid": "Retry_Interval",
  "displayName": "Retry Interval [mins]",
  "value": "61",
  "defaultValue": "60.0",
  "valueType": "NUMERIC",
  "min": 0,
  "max": 50000,
  "entityType": "VirtualMachine",
  "sourceGroupName": "A_Few_ACM_VMs"
}

```

}

Getting Settings Policies of a Group

Referenced Endpoint: [Settings Policies \(on page 214\)](#)

Gets the settings policies of the specified group.

Example:

Response:

Getting Statistics of a Group

Referenced Endpoint: [Stats \(on page 220\)](#)

Gets all statistics for the specified group:

NOTE:

When you retrieve statistics for a cluster, using the `/groups` endpoint will return the aggregated statistics for all applicable cluster entities. For individual stats per entity, use the `/stats` endpoint.

Some statistics are only valid for certain scopes. When you request given statistics for a scope that doesn't include them, the API does not return any data. For example, the `numVMs` statistic is valid in only the Market and Cluster scopes – the API omits `numVMs` data from the response when you query other scopes.

Example: `https://10.10.10.10/api/v3/groups/_WvaGkOBjEeierZ9blbxmzg/stats`

Response: A list of `StatSnapshotApiDTOs` representing the statistics for the specified group:

```
[
  {
    "displayName": "A_Few_ACM_VMs",
    "date": "2019-03-31T17:11:35-04:00",
    "statistics": [
      {
        "displayName": "(multiple)",
        "name": "priceIndex",
        "values": {
          "max": 1.44,
          "min": 1.03,
          "avg": 1.19,
          "total": 4.77
        },
        "value": 1.19
      },
      {
        "displayName": "(multiple)",
        "name": "Q1VCPUs",
        "capacity": {
          "max": 20000,
          "min": 20000,
          "avg": 20000,
          "total": 60000
        },
        "reserved": {
          "max": 10000,
          "min": 10000,
          "avg": 10000,
          "total": 30000
        }
      }
    ]
  }
]
```

```

    "filters": [
      {
        "type": "relation",
        "value": "bought"
      }
    ],
    ...
  }
  ...
]
}

```

Getting a Filtered List of Statistics of a Group

Referenced Endpoint: [Stats \(on page 220\)](#)

Gets a filtered list of statistics for the specified group. For more information about creating a filtered list of statistics, including example POSTs and responses, see *Filtered Statistics* in the [Statistics Endpoint \(on page 220\)](#)

Example: POST https://10.10.10.10/api/v3/groups/_WvaGkOBjEeierZ9b1bxmzg/stats

Example input:

```

{
  "endDate": "-1d",
  "startDate": "-1w",
  "statistics": [
    {
      "filters": [
        {
          "type": "relation",
          "value": "bought"
        }
      ]
    }
  ]
}

```

Response: A list of StatSnapshotApiDTOs representing the statistics for the specified group:

```

[
  {
    "displayName": "A_Few_ACM_VMs",
    "date": "2019-03-24T00:00:00-04:00",
    "statistics": [
      {
        "name": "Mem",
        "capacity": {
          "max": 134214448,
          "min": 134214448,
          "avg": 134214448,
          "total": 1073715580
        },
        "filters": [
          {
            "type": "relation",
            "value": "bought"
          }
        ],
        "units": "KB",
        "values": {
          "max": 2073084,

```

```

        "min": 679782.1,
        "avg": 1124840.4,
        "total": 4499361.5
    },
    "value": 1124840.4
},
{
  "name": "MemAllocation",
  "capacity": {
    "max": 504346624,
    "min": 504346624,
    "avg": 504346624,
    "total": 4034772990
  },
  "filters": [
    {
      "type": "relation",
      "value": "bought"
    }
  ],
  "units": "KB",
  "values": {
    "max": 2073084,
    "min": 679782.1,
    "avg": 1124840.4,
    "total": 4499361.5
  },
  "value": 1124840.4
},
{
  "name": "Q1VCPUs",
  "capacity": {
    "max": 20000,
    "min": 20000,
    "avg": 20000,
    "total": 120000
  },
  "filters": [
    {
      "type": "relation",
      "value": "bought"
    }
  ],
  "values": {
    "max": 90,
    "min": 14,
    "avg": 41.08,
    "total": 123.23
  },
  "value": 41.08
}
...
]
}
]

```

Getting the Supply Chain of a Group

Referenced Endpoint: [Supply Chains \(on page 237\)](#)

Using one or more of the following parameters, you can filter the supply chain that is returned by this request:

Parameter	Description
market_Uuid	The UUID of the market whose supply chain will be returned
types	<p>The entity types whose supply chain will be returned. Choose from:</p> <ul style="list-style-type: none"> ▪ APPLICATION ▪ APPLICATION_SERVER ▪ BUSINESS_ACCOUNT ▪ BUSINESS_UNIT ▪ CHASSIS ▪ CLOUD_SERVICE ▪ CONTAINER ▪ CONTAINER_POD ▪ DATABASE ▪ DATABASE_SERVER ▪ DATACENTER ▪ DISK_ARRAY ▪ DPOD ▪ IO_MODULE ▪ LOAD_BALANCER ▪ LOGICAL_POOL ▪ NETWORK ▪ PHYSICAL_MACHINE ▪ STORAGE ▪ STORAGE_CONTROLLER ▪ SWITCH ▪ VIRTUAL_APPLICATION ▪ VIRTUAL_DATACENTER ▪ VIRTUAL_MACHINE ▪ VPOD
entity_states	<p>Only return entities in the specified states. Choose from:</p> <ul style="list-style-type: none"> ▪ ACTIVE: Entity is actively consuming resources. ▪ EVACUATED: Entity is ready to suspend and will not participate in the market, but will not generate a SUSPEND action. <p style="text-align: center;">NOTE: This state replaces the SUSPEND state, and requires additional configuration to enable. Workload Optimization Manager does not recommend enabling this state.</p> <ul style="list-style-type: none"> ▪ FAILOVER: This entity is reserved for failover and will not participate in the market. ▪ IDLE:

Parameter	Description
	<p>Entity is powered off and not actively consuming market resources.</p> <ul style="list-style-type: none"> ▪ LAUNCH: Entity is starting. ▪ MAINTENANCE: Entity is in maintenance mode. ▪ NOT_MONITORED: Entity is not currently monitored by Workload Optimization Manager. ▪ QUEUED: Entity is in the process of changing from one state to another. <p>NOTE: This state is internal to Workload Optimization Manager and will not appear in the UI, but may appear in an API response if the call is executed at the precise moment the entity is changing state.</p> <ul style="list-style-type: none"> ▪ RESOURCE_ALLOCATION: Cloud entity is being created. ▪ RESOURCE_RELEASE: Cloud Entity is being deleted. ▪ SUSPEND: Entity is suspended or the guest OS is in sleep, standby, or suspended state. The entity is not removed from the environment, but will not be used in market decisions. Based on market conditions, suspended entities can be started, re-adding them to the market. ▪ SUSPEND_PENDING: Entity is making preparations to suspend, or is the next entity of its type to suspend. ▪ TERMINATE_PENDING: Entity is in the process of being deleted. ▪ UNKNOWN: Workload Optimization Manager is unable to obtain the current state of the entity. This occurs when the entity is reported to the hypervisor as having a state of DISCONNECTED, ORPHANED, or INVALID.
environment_type	Only return actions that affect entities in the specified environment type. [CLOUD, HYBRID, ONPREM].
detail_type	The level of detail returned for each item in the returned supply chain. [compact, entity, aspects].
health	Return a small summary of the health of the returned supply chain.

Example: GET https://10.10.10.10/api/v3/groups/_WvaGkOObjEeierZ9b1bxmvgg/supplychains?types=PhysicalMachine&entity_states=ACTIVE&entity_states=SUSPEND&entity_states=MAINTENANCE&enviro

Response: A SupplychainApiDTO representing the supply chain of the specified group:

```

"seMap": {
  "PhysicalMachine": {
    "depth": 1,
    "entitiesCount": 3,
    "healthSummary": {
      "Minor": 1,
      "Normal": 2
    },
    "stateSummary": {
      "ACTIVE": 3
    },
    "connectedProviderTypes": [
      "DataCenter",
      "Storage"
    ],
    "instances": {
      "34313836-3333-5553-4537-33364e385146": {
        "links": [
          {
            "rel": "self",
            "href":
"https://10.10.10.10/api/v3/entities/34313836-3333-5553-4537-33364e385146?include_aspects=false"
          }
        ],
        "uuid": "34313836-3333-5553-4537-33364e385146",
        "displayName": "dc17-host-01.dev.mycorp.com",
        "className": "PhysicalMachine",
        "priceIndex": 3.2925103,
        "state": "ACTIVE",
        "severity": "Normal",
        "discoveredBy": {
          "uuid": "_yXCEIF6hEeiNCKdg4ZVvVQ",
          "displayName": "vsphere-dc17.dev.mycorp.com",
          "type": "vCenter"
        },
        "remoteId": "host-621",
        "environmentType": "ONPREM"
      },
      ...
    }
  }
}

```

```

}
}
}
}

```

Groups Endpoint Tips

GroupBy Field Criteria

When using the POST requests to query actions and action statistics, you can use the `groupBy` parameter to organize the results. The valid values for this parameter differ by entity type:

NOTE:

When sending an inputDTO using this field, only the value is needed.

Example: "groupBy": "vmsByPMName"

```
{
  "VirtualMachine": {
    "criteria": [
      {
        "filterType": "vmsByName"
      },
      {
        "filterType": "vmsByPMName"
      },
      {
        "filterType": "vmsByStorage"
      },
      {
        "filterType": "vmsByNetwork"
      },
      {
        "filterType": "vmsByApplication"
      },
      {
        "filterType": "vmsByDatabaseServer"
      },
      {
        "filterType": "vmsByDatabaseServerVersion"
      },
      {
        "filterType": "vmsByDC"
      },
      {
        "filterType": "vmsByVDC"
      },
      {
        "filterType": "vmsByDCnested"
      },
      {
        "filterType": "vmsByNumCPUs"
      },
      {
        "filterType": "vmsByMem"
      },
      {
        "filterType": "vmsByGuestName"
      },
      {
        "filterType": "vmsByAltName"
      },
      {
        "filterType": "vmsByClusterName"
      },
      {
        "filterType": "vmsByDiskArrayName"
      },
      {
        "filterType": "vmsByLogicalPoolName"
      },
      {
        "filterType": "vmsByProfileName"
      },
      {
        "filterType": "vmsByTag"
      },
      {
        "filterType": "vmsByState"
      },
      {
        "filterType": "vmsByBusinessAccountUuid"
      }
    ]
  }
}
```



```

    },
    {
      "filterType": "vmsByResourceGroupUuid"
    }
  ]
},
"VirtualDataCenter": {
  "criteria": [
    {
      "filterType": "vdcByVDCName"
    },
    {
      "filterType": "vdcByVDCName"
    },
    {
      "filterType": "vdcByTag"
    },
    {
      "filterType": "vdcByState"
    }
  ]
},
"PhysicalMachine": {
  "criteria": [
    {
      "filterType": "pmsByName"
    },
    {
      "filterType": "pmsByStorage"
    },
    {
      "filterType": "pmsByNetwork"
    },
    {
      "filterType": "pmsBySwitch"
    },
    {
      "filterType": "pmsByNumVms"
    },
    {
      "filterType": "pmsByDC"
    },
    {
      "filterType": "pmsByMem"
    },
    {
      "filterType": "pmsByNumCPUs"
    },
    {
      "filterType": "pmsByVendorName"
    },
    {
      "filterType": "pmsByCPUModel"
    },
    {
      "filterType": "pmsByModel"
    },
    {
      "filterType": "pmsByTimezone"
    },
    {
      "filterType": "pmsByClusterName"
    },
    {
      "filterType": "pmsByTag"
    }
  ]
}

```

```
    },
    {
      "filterType": "pmsByState"
    }
  ]
},
"Storage": {
  "criteria": [
    {
      "filterType": "storageByName"
    },
    {
      "filterType": "storageByTag"
    },
    {
      "filterType": "storageByVMs"
    },
    {
      "filterType": "storageByDC"
    },
    {
      "filterType": "storageByPMCluster"
    },
    {
      "filterType": "storageByState"
    }
  ]
},
"Application": {
  "criteria": [
    {
      "filterType": "appsByName"
    },
    {
      "filterType": "appsByTag"
    }
  ]
},
"ApplicationComponent": {
  "criteria": [
    {
      "filterType": "appSrvsByName"
    }
  ]
},
"WebServer": {
  "criteria": [
    {
      "filterType": "wbSrvsByName"
    }
  ]
},
"BusinessApplication": {
  "criteria": [
    {
      "filterType": "busAppsByName"
    }
  ]
},
"Database": {
  "criteria": [
    {
      "filterType": "databaseByName"
    },
    {
```

```

        "filterType": "databaseByTag"
    },
    {
        "filterType": "databaseByBusinessAccountUuid"
    },
    {
        "filterType": "databaseByResourceGroupUuid"
    }
]
},
"DatabaseServer": {
    "criteria": [
        {
            "filterType": "databaseServerByName"
        },
        {
            "filterType": "databaseServerByTag"
        },
        {
            "filterType": "databaseServerByBusinessAccountUuid"
        },
        {
            "filterType": "databaseServerByEngine"
        },
        {
            "filterType": "databaseServerByEdition"
        },
        {
            "filterType": "databaseServerByVersion"
        }
    ]
},
"VirtualApplication": {
    "criteria": [
        {
            "filterType": "vappsByName"
        }
    ]
},
"Cluster": {
    "criteria": [
        {
            "filterType": "clustersByName"
        },
        {
            "filterType": "clustersByTag"
        }
    ]
},
"DataCenter": {
    "criteria": [
        {
            "filterType": "datacentersByName"
        },
        {
            "filterType": "datacentersByTag"
        }
    ]
},
"Group": {
    "criteria": [
        {
            "filterType": "groupsByName"
        },
        {

```

```
    "filterType": "groupsByTargetName"
  }
]
},
"StorageCluster": {
  "criteria": [
    {
      "filterType": "storageClustersByName"
    }
  ]
},
"DiskArray": {
  "criteria": [
    {
      "filterType": "diskarrayByName"
    }
  ]
},
"Zone": {
  "criteria": [
    {
      "filterType": "zonsByName"
    }
  ]
},
"Region": {
  "criteria": [
    {
      "filterType": "regsByName"
    }
  ]
},
"Network": {
  "criteria": [
    {
      "filterType": "netsByName"
    }
  ]
},
"LoadBalancer": {
  "criteria": [
    {
      "filterType": "lbsByName"
    }
  ]
},
"Chassis": {
  "criteria": [
    {
      "filterType": "chasByName"
    }
  ]
},
"IOModule": {
  "criteria": [
    {
      "filterType": "ioModuleByName"
    }
  ]
},
"StorageController": {
  "criteria": [
    {
      "filterType": "storagecontrollerByName"
    }
  ]
}
```

```

    ],
  },
  "DPod":{
    "criteria":[
      {
        "filterType":"dpodByName"
      }
    ]
  },
  "VPod":{
    "criteria":[
      {
        "filterType":"vpodByName"
      }
    ]
  },
  "LogicalPool":{
    "criteria":[
      {
        "filterType":"logicalPoolByName"
      }
    ]
  },
  "Switch":{
    "criteria":[
      {
        "filterType":"switchByName"
      }
    ]
  },
  "Container":{
    "criteria":[
      {
        "filterType":"containersByName"
      },
      {
        "filterType":"containersByVMName"
      }
    ]
  },
  "ContainerPod":{
    "criteria":[
      {
        "filterType":"containerpodsByName"
      },
      {
        "filterType":"containerpodsByVMName"
      }
    ]
  },
  "ServiceEntity":{
    "criteria":[
      {
        "filterType":"workloadByBusinessAccountUuid"
      },
      {
        "filterType":"workloadByResourceGroupUuid"
      }
    ]
  },
  "Workload":{
    "criteria":[
      {
        "filterType":"workloadByBusinessAccountUuid"
      }
    ],
  },

```

```
{
  "filterType": "workloadByResourceGroupUuid"
}
]
},
"ResourceGroup": {
  "criteria": [
    {
      "filterType": "resourceGroupByName"
    },
    {
      "filterType": "resourceGroupByUuid"
    },
    {
      "filterType": "resourceGroupByBusinessAccountUuid"
    },
    {
      "filterType": "resourceGroupByTag"
    }
  ]
},
"BusinessAccount": {
  "criteria": [
    {
      "filterType": "businessAccountByName"
    },
    {
      "filterType": "businessAccountByUuid"
    },
    {
      "filterType": "subBusinessAccountOfUuid"
    },
    {
      "filterType": "businessAccountValidationStatus"
    },
    {
      "filterType": "businessAccountTargetName"
    },
    {
      "filterType": "businessAccountCloudProvider"
    }
  ]
},
"BillingFamily": {
  "criteria": [
    {
      "filterType": "billingFamilyByName"
    }
  ]
},
"ViewPod": {
  "criteria": [
    {
      "filterType": "viewPodByName"
    }
  ]
},
"DesktopPool": {
  "criteria": [
    {
      "filterType": "desktopPoolByName"
    },
    {
      "filterType": "desktopPoolByViewPod"
    }
  ]
}
```

```

    ]
  },
  "BusinessUser": {
    "criteria": [
      {
        "filterType": "businessUserByName"
      },
      {
        "filterType": "businessUserByDesktopPool"
      }
    ]
  }
}

```

Licenses Endpoint

A product license determines the product features you can use, and the number of workloads that you can manage with Workload Optimization Manager. To increase the number of workloads you can manage, you can add additional licenses to your Workload Optimization Manager installation. Note that if you use multiple licenses, they must all support the same feature set.

In all circumstances, you should contact your sales representative to make sure that you get the correct license, and that you know how to install it properly.

Using the licenses endpoint, you can:

- Get a license summary
- Get a list of licenses currently added to your Workload Optimization Manager appliance
- Add a license
- Delete a license

Licenses Requests

Getting Licenses

Gets a list of licenses. For instances with multiple licenses, the `licenses/summary` request will return a summed total of licensed workload. For example, if you have two licenses for 10,000 workloads each, the `/licenses` request will return both LicenseApiDTOs in a list. The `/licenses/summary` call will return a single summed LicenseApiDTO, which will state that you have capacity for 20,000 workloads.

Examples:

- **List of Licenses:** GET `https://10.10.10.10/api/v3/licenses`
- **License Summary:** GET `https://10.10.10.10/api/v3/licenses/summary`

Adding a License

Adds a license to your Workload Optimization Manager installation. You may optionally specify the `dryRun` parameter which, when set to true, will validate the license file but not apply it to the appliance.

NOTE:

This request requires a multipart file as input. Due to this requirement, this request cannot be executed directly from the Swagger.

Example: POST `https://10.10.10.10/api/v3/licenses?file=%5Bobject%20File%5D&dryRun=true`

Deleting a License

Removes the specified license from your Workload Optimization Manager installation. Deleting a license may reduce your licensed workload capacity below your current usage. In this case, you will be unable to add more targets until more workload capacity is available.

Example: DELETE `https://10.10.10.10/api/v3/licenses/_I_WVcJtWEeiGEs_doVlDOW`

Logs Requests

The logs endpoint is not implemented at this time.

Markets Endpoint

Workload Optimization Manager uses market-based analysis to perform workload management. To do this, it constructs a model of your environment, representing each entity as a buyer and seller in a market. You can access this model via a named market resource. There are two types of markets:

- **Real-Time Market**

The real-time market performs analysis and workload management on your environment. You can use the real-time market to access entities and get current or historical data about them.

The `displayName` of the real-time market is `Market`. This market should always be in the `RUNNING` state. You should not attempt to use the API to stop this market.

Workload Optimization Manager performs discovery to populate the topology it manages (the collection of entities in the real-time market). For this reason, you should never use the API add or delete entities in the real-time market.

- **Plan Market**

A plan market begins as a snapshot of the real-time market. You POST a scenario to the real-time market, and Workload Optimization Manager makes a copy of the real-time market to create a plan market. This plan market is just like the real-time market, except for any changes that were declared in the scenario. For example, if the scenario declares a scope for the plan, then the plan market only contains entities that are within that scope.

Workload Optimization Manager runs economic cycles (buy/sell cycles) against this plan market until there are no more meaningful improvements to be made. At this point the plan run is completed.

Note that once Workload Optimization Manager creates the plan market, that market stays in memory until you delete it. Also note that you can later apply a scenario to the plan market. This is how you run a plan on a plan. The logic flow is the same, and Workload Optimization Manager creates yet another plan market to run the analysis.

This endpoint contains references to start and end times for certain operations. For more information, including valid time formats, see [Time in the Workload Optimization Manager API \(on page 17\)](#)

Using the markets endpoint of the Workload Optimization Manager API, you can:

- Get a list of markets
- Save or Stop a plan market
- Delete a plan market
- See unplaced entities in a plan market
- Get filtered and unfiltered lists of actions, entities, notifications, policies, reservations, and statistics for a particular market
- Get, edit, and delete placement policies in the real-time market

Determining the Status of the Main Market

After restarting the Workload Optimization Manager instance, the UI and API may be available before the real-time market has finished initializing and loading the topology of your environment. To check market status, execute the `GET /markets/market_uuid` request with a market UUID of `Market`.

If information about the market is returned, it has initialized. If the real-time market is not initialized, the following response will be returned:

```
{
  "type": 400,
  "exception": "com.vmturbo.api.exceptions.OperationFailedException: Infrastructure is not controlled yet. Could not get market.",
  "message": "Infrastructure is not controlled yet. Could not get market."
}
```

Markets Requests

Getting a List of Markets

Returns all the Markets currently stored on your Workload Optimization Manager appliance. To get the details of a single market, include the UUID of the market in the request.

NOTE:

One market will have the `displayName` of `Market`. This market is the real-time market. You should not add nor delete entities directly to this market using the API, nor should you attempt to execute a `STOP` action on this market.

Examples:

- All Markets: `GET https://10.10.10.10/api/v3/markets`
- Single Market: `GET https://10.10.10.10/api/v3/markets/_0x30YUg1Ed-gHc4L513yOA`

Response: A list of `MarketApiDTOs` representing the markets on your appliance.

```
[
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/markets/_0x30YUg1Ed-gHc4L513yOA"
      }
    ],
    "uuid": "_0x30YUg1Ed-gHc4L513yOA",
    "displayName": "Market",
    "className": "Market",
    "state": "RUNNING",
    "unplacedEntities": false,
    "environmentType": "HYBRID"
  },
  ...
]
```

Stopping or Saving Plan Markets

For troubleshooting, you may need to stop or save a plan market that is taking a long time to run, or does not seem to complete. These operations should never be used on the real-time market. Note that a manually-stopped plan market may have incomplete data.

This request takes the following parameters:

market_Uuid	The UUID of the market that will be stopped or saved.
operation	The operation to perform on the market. [stop, save]

Example: POST https://10.10.10.10/api/v3/markets/_NO8_sCi_EemDHtuQzfdzxw?operation=stop

Response: The MarketApiDTO of the specified market, showing its state as STOPPING.

```
{
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/markets/_NO8_sCi_EemDHtuQzfdzxw"
    },
    {
      "rel": "Market notifications",
      "href": "https://10.10.10.10/api/v3/markets/_NO8_sCi_EemDHtuQzfdzxw/notifications"
    },
    {
      "rel": "Market actions",
      "href": "https://10.10.10.10/api/v3/markets/_NO8_sCi_EemDHtuQzfdzxw/actions?ascending=true"
    },
    {
      "rel": "To Entities",
      "href": "https://10.10.10.10/api/v3/markets/_NO8_sCi_EemDHtuQzfdzxw/entities"
    },
    {
      "rel": "To Constraints",
      "href": "https://10.10.10.10/api/v3/markets/_NO8_sCi_EemDHtuQzfdzxw/policies"
    },
    {
      "rel": "To Reservations",
      "href": "https://10.10.10.10/api/v3/markets/_NO8_sCi_EemDHtuQzfdzxw/reservations"
    },
    {
      "rel": "To Statistics",
      "href": "https://10.10.10.10/api/v3/markets/_NO8_sCi_EemDHtuQzfdzxw/stats"
    },
    {
      "rel": "To Unplaced Entities",
      "href": "https://10.10.10.10/api/v3/markets/_NO8_sCi_EemDHtuQzfdzxw/unplacedentities"
    },
    {
      "rel": "To Market List",
      "href": "https://10.10.10.10/api/v3/markets"
    }
  ],
  "uuid": "_NO8_sCi_EemDHtuQzfdzxw",
  "displayName": "ADD_WORKLOAD_administrator_1549313730114",
  "className": "Market",
  "state": "STOPPING",
  "scenario": {
    "uuid": "2452690315520",
    "displayName": "Add Workload 1",
    "owners": [],

```

```

    "type": "ADD_WORKLOAD"
  },
  "unplacedEntities": false,
  "runDate": "2019-02-04T15:55:30-05:00",
  "environmentType": "ONPREM"
}

```

Deleting a Plan Market

Deleting a plan market removes the market entity along with all the topological links, such as actions, notifications, entities, policies and reservations. This operation is permanent. To delete a plan market, pass the UUID of the market in the request.

This request takes the following parameters:

market_Uuid	The UUID of the market that will be deleted.
-------------	--

Example: DELETE https://10.10.10.10/api/v3/markets/_NO8_sCi_EemDHtuQzfdzxw

Response: The MarketApiDTO of the specified market, showing its state as DELETING.

```

{
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/markets/2452692215536"
    }
  ],
  "uuid": "2452692215536",
  "displayName": "ADD_WORKLOAD_administrator_1549313730114",
  "className": "Market",
  "state": "DELETING",
  "scenario": {
    "uuid": "2452692204928",
    "displayName": "Add Workload 1",
    "owners": [
      {
        "links": [
          {
            "rel": "self",
            "href": "https://10.10.10.10/api/v3/users/_4T_7kwY-Ed-WUKbEYSVIDw"
          }
        ],
        "uuid": "_4T_7kwY-Ed-WUKbEYSVIDw",
        "displayName": "Administrator User",
        "username": "administrator",
        "roleUuid": "_4UAioQY-Ed-WUKbEYSVIDw",
        "roleName": "administrator",
        "loginProvider": "Local",
        "type": "DedicatedCustomer",
        "showSharedUserSC": false
      }
    ]
  },
  "type": "ADD_WORKLOAD"
},
"saved": true,
"unplacedEntities": false,
"runDate": "2019-02-04T15:55:30-05:00",
"runCompleteDate": "2019-02-04T15:57:26-05:00",
"environmentType": "ONPREM"
}

```

Getting a Filtered List of Actions for a Market

Referenced Endpoint: [Actions \(on page 29\)](#)

Gets a list of actions, given a market UUID and filtered by an ActionApiInputDTO using one or more of the following criteria:

Criteria	Description
actionModelList	<ul style="list-style-type: none"> ▪ DISABLED: Do not recommend or perform the action. When you disable an action, the user interface will no longer display actions of that type. ▪ RECOMMENDED: Recommend the action so a user can execute it via the given hypervisor or by other external means ▪ MANUAL: Recommend the action, and provide the option to execute that action through the Workload Optimization Manager user interface or an /actions API request. ▪ AUTOMATED: You have directed Workload Optimization Manager to execute the action automatically. ▪ COLLECTION (UNUSED): Legacy action mode, no longer used.
actionStateList	<ul style="list-style-type: none"> ▪ DISABLED: An action whose policy has been disabled. ▪ RECOMMEND: An action that cannot be automated due to policy settings or must be executed outside the system, such as the purchase of hardware. ▪ PENDING_ACCEPT: When the action mode is set to manual, a recommended action that has not been accepted or cleared. ▪ ACCEPTED: An action that has been accepted, but is not yet in progress. ▪ IN_PROGRESS: An action that is being executed. ▪ SUCCEEDED: An action that was accepted and completed successfully. ▪ FAILED: An action that was accepted and did not complete successfully. ▪ REJECTED: When the action mode is set to manual, an action that has been rejected by the user. ▪ CLEARED: When the action mode is set to manual, an action that is no longer recommended by the market. ▪ ACCOUNTING:

Criteria	Description
	<p>For cloud entities, an action to resize in order to use a different instance template.</p> <ul style="list-style-type: none"> ▪ QUEUED: When more than 10 actions are to be executed for a single target, Workload Optimization Manager will place the 11th and all subsequent actions into a QUEUED state, and they will execute as the previous actions complete.
actionTypeList	<ul style="list-style-type: none"> ▪ START: Start an entity, and add it to the Workload Optimization Manager market. ▪ MOVE: Move an entity from one provider to another. For example, moving a VM between hosts, or a datastore between disk arrays. ▪ SUSPEND: Suspend the entity to exclude its capacity from your environment. Suspend does not remove the entity from your environment, but the market does not include the entity in its analysis. Based on market conditions, analysis can recommend restarting suspended entities, which includes them in market analysis once again. ▪ ADD_PROVIDER: This is equivalent to the START action, but for storage entities. ▪ CHANGE: Move a virtual machine's storage between datastores. ▪ PROVISION: Add capacity to your environment. ▪ RECONFIGURE: Analysis recommends this when a VM is not able to correct a misconfiguration via another type of action. For example, analysis can recommend a RECONFIGURE action when a placement policy requires a VM to move to a host on a particular cluster, but cross-cluster moves are not permitted. ▪ DELETE: This is equivalent to the SUSPEND action, but for storage entities. ▪ RESERVE_ON_PM: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular host. ▪ RESERVE_ON_DS: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular datastore. ▪ RESIZE_FOR_EFFICIENCY: A resize that reduces the capacity of a commodity, such as vCPU, or vMEM. ▪ RESIZE_FOR_PERFORMANCE: A resize that increases the capacity of a commodity, such as vCPU, or vMEM.
cleared	Default: false.

Criteria	Description
	When <code>true</code> , actions that were removed from the action list before being executed will be returned.
<code>costType</code>	<ul style="list-style-type: none"> ▪ <code>Saving</code> An action that will decrease cloud spending. ▪ <code>Investment</code> An action that will increase cloud spending.
<code>cumulative</code>	Default: <code>false</code> . When <code>true</code> , shows the savings for each action in a scope as a cumulative total, rather than showing the savings for individual actions.
<code>environmentType</code>	<ul style="list-style-type: none"> ▪ <code>ONPREM</code>: Returns only actions related to entities that are part of your on-premises environment. ▪ <code>CLOUD</code>: Returns only actions related to entities that are part of your cloud environment.
<code>groupBy</code>	You may group the actions returned by the following criteria: [<code>actionModes</code> , <code>actionStates</code> , <code>actionTypes</code> , <code>risk</code> , <code>riskSeverity</code> , <code>riskSubCategory</code>]
<code>hasReservedInstance</code>	Default: <code>false</code> . When <code>true</code> , only actions that are related to reserved instances will be returned.
<code>relatedEntityTypes</code>	Returns only actions related to entities of these types within the scope. For example, if your scope is a virtual datacenter and you specify <code>VirtualMachine</code> as a related entity type, the request will include only those actions related to VMs in the specified virtual datacenter. Choose from the following entity types: [<code>Datacenter</code> , <code>PhysicalMachine</code> , <code>VirtualMachine</code> , <code>Storage</code> , <code>Application</code> , <code>Chassis</code> , <code>DiskArray</code> , <code>IOModule</code> , <code>StorageControl</code> , <code>Switch</code> , <code>VirtualDataCenter</code> , <code>VPod</code> , <code>DPod</code> , <code>Container</code> , <code>Database</code> , <code>DatabaseServerContainer</code> , <code>LogicalPool</code>]
<code>riskSeverityList</code>	Returns only actions of the given severities: [<code>Unknown</code> , <code>Normal</code> , <code>Minor</code> , <code>Major</code> , <code>Critical</code>]
<code>riskSubCategoryList</code>	returns only actions of the given subcategories: [<code>Performance Assurance</code> , <code>Efficiency Improvement</code> , <code>Prevention</code> , <code>Compliance</code>]

This request takes the following parameters:

<code>market_Uuid</code>	The UUID of the market whose actions will be returned.
<code>cursor</code>	When making subsequent calls to retrieve additional results, this is the cursor returned by the last call to this method.
<code>limit</code>	The maximum number of items to return. Must be a positive integer. If not set, the server will provide a default (20).

order_by	The field to order the results by. [creation_date, name, risk_category, savings, severity].
ascending	Default: true. When false, results will be in descending order.

Example: POST https://10.10.10.10/api/v3/markets/Market/actions?order_by=severity&ascending=true

Example input: In this example, a list of actions that meet the following criteria will be returned and grouped by the `actionMode` of the action, in order of severity:

- Is in state `PENDING_ACCEPT`
- Is part of an on-premises environment
- Is an action for a virtual machine
- Is an action generated by the Workload Optimization Manager real-time market

```
{
  "actionInput": {
    "actionStateList": [
      "PENDING_ACCEPT"
    ],
    "environmentType": "ONPREM",
    "groupBy": [
      "actionModes"
    ]
  },
  "relatedType": "VirtualMachine",
  "scopes": [
    "Market"
  ]
}
```

Response: `ActionApiDTOs` meeting the specified criteria.

```
{
  ..
  "uuid": "_qFuM8CiOEemDHtuQzfdzxw",
  "createTime": "2019-02-04T10:07:58-05:00",
  "actionType": "RIGHT_SIZE",
  "actionState": "PENDING_ACCEPT",
  "actionMode": "MANUAL",
  "details": "Scale VirtualMachine 8f0e3136-b259-43e5-41f8-0d2c64c62acc from Standard_B2ms to Standard_E2s_v3",
  "importance": 0,
  ...
}
```

Getting Statistics for a Filtered List of Actions for a Market

Referenced Endpoint: [Actions \(on page 29\)](#)

Referenced Endpoint: [Stats \(on page 220\)](#)

Gets a list of statistics for a filtered list of actions. Statistics returned include the number of actions, total savings/investment, and the number of entities affected by the actions. In addition to the Market UUID, provide an ActionApiInputDTO using one or more of the following criteria:

Criteria	Description
<p>actionModelList</p>	<ul style="list-style-type: none"> ▪ DISABLED: Do not recommend or perform the action. When you disable an action, the user interface will no longer display actions of that type. ▪ RECOMMENDED: Recommend the action so a user can execute it via the given hypervisor or by other external means ▪ MANUAL: Recommend the action, and provide the option to execute that action through the Workload Optimization Manager user interface or an /actions API request. ▪ AUTOMATED: You have directed Workload Optimization Manager to execute the action automatically. ▪ COLLECTION (UNUSED): Legacy action mode, no longer used.
<p>actionStateList</p>	<ul style="list-style-type: none"> ▪ DISABLED: An action whose policy has been disabled. ▪ RECOMMEND: An action that cannot be automated due to policy settings or must be executed outside the system, such as the purchase of hardware. ▪ PENDING_ACCEPT: When the action mode is set to manual, a recommended action that has not been accepted or cleared. ▪ ACCEPTED: An action that has been accepted, but is not yet in progress. ▪ IN_PROGRESS: An action that is being executed. ▪ SUCCEEDED: An action that was accepted and completed successfully. ▪ FAILED: An action that was accepted and did not complete successfully. ▪ REJECTED: When the action mode is set to manual, an action that has been rejected by the user. ▪ CLEARED: When the action mode is set to manual, an action that is no longer recommended by the market. ▪ ACCOUNTING: For cloud entities, an action to resize in order to use a different instance template.

Criteria	Description
	<ul style="list-style-type: none"> ▪ QUEUED: When more than 10 actions are to be executed for a single target, Workload Optimization Manager will place the 11th and all subsequent actions into a QUEUED state, and they will execute as the previous actions complete.
actionTypeList	<ul style="list-style-type: none"> ▪ START: Start an entity, and add it to the Workload Optimization Manager market. ▪ MOVE: Move an entity from one provider to another. For example, moving a VM between hosts, or a datastore between disk arrays. ▪ SUSPEND: Suspend the entity to exclude its capacity from your environment. Suspend does not remove the entity from your environment, but the market does not include the entity in its analysis. Based on market conditions, analysis can recommend restarting suspended entities, which includes them in market analysis once again. ▪ ADD PROVIDER: This is equivalent to the START action, but for storage entities. ▪ CHANGE: Move a virtual machine's storage between datastores. ▪ PROVISION: Add capacity to your environment. ▪ RECONFIGURE: Analysis recommends this when a VM is not able to correct a misconfiguration via another type of action. For example, analysis can recommend a RECONFIGURE action when a placement policy requires a VM to move to a host on a particular cluster, but cross-cluster moves are not permitted. ▪ DELETE: This is equivalent to the SUSPEND action, but for storage entities. ▪ RESERVE_ON_PM: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular host. ▪ RESERVE_ON_DS: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular datastore. ▪ RESIZE_FOR_EFFICIENCY: A resize that reduces the capacity of a commodity, such as vCPU, or vMEM. ▪ RESIZE_FOR_PERFORMANCE: A resize that increases the capacity of a commodity, such as vCPU, or vMEM.
cleared	<p>Default: false.</p> <p>When true, actions that were removed from the action list before being executed will be returned.</p>
costType	<ul style="list-style-type: none"> ▪ Saving An action that will decrease cloud spending.

Criteria	Description
	<ul style="list-style-type: none"> Investment An action that will increase cloud spending.
cumulative	<p>Default: false.</p> <p>When true, shows the savings for each action in a scope as a cumulative total, rather than showing the savings for individual actions.</p>
environmentType	<ul style="list-style-type: none"> ONPREM: Returns only actions related to entities that are part of your on-premises environment. CLOUD: Returns only actions related to entities that are part of your cloud environment.
groupBy	You may group the actions returned by the following criteria: [actionModes, actionStates, actionTypes, risk, riskSeverity, riskSubCategory]
hasReservedInstance	<p>Default: false.</p> <p>When true, only actions that are related to reserved instances will be returned.</p>
relatedEntityTypes	<p>Returns only actions related to entities of these types within the scope. For example, if your scope is a virtual datacenter and you specify VirtualMachine as a related entity type, the request will include only those actions related to VMs in the specified virtual datacenter.</p> <p>Choose from the following entity types: [Datacenter, PhysicalMachine, VirtualMachine, Storage, Application, Chassis, DiskArray, IOModule, StorageControl, Switch, VirtualDataCenter, VPod, DPod, Container, Database, DatabaseServerContainer, Logical-Pool]</p>
riskSeverityList	Returns only actions of the given severities: [Unknown, Normal, Minor, Major, Critical]
riskSubCategoryList	returns only actions of the given subcategories: [Performance Assurance, Efficiency Improvement, Prevention, Compliance]

Example: POST <https://10.10.10.10/api/v3/markets/Market/actions/stats>

Example input: In this example, a list of actions that meet the following criteria will be returned and grouped by the `actionMode` of the action, in order of severity:

- Is in state `PENDING_ACCEPT`
- Is part of an on-premises environment
- Is an action for a virtual machine
- Is an action generated by the Workload Optimization Manager real-time market

```
{
  "actionInput": {
    "actionStateList": [
      "PENDING_ACCEPT"
    ],
    "environmentType": "ONPREM",
    "groupBy": [
```

```

        "actionModes"
      ]
    },
    "relatedType": "VirtualMachine",
    "scopes": [
      "Market"
    ]
  ]
}

```

Response: A list of StatSnapshotApiDTO containing statistics about the filtered actions.

```

[
  {
    "date": "2019-02-05T14:40:08-05:00",
    "statistics": [
      {
        "name": "numActions",
        "values": {
          "max": 268,
          "min": 268,
          "avg": 268,
          "total": 268
        },
        "value": 268
      },
      {
        "name": "costPrice",
        "filters": [
          {
            "type": "property",
            "value": "savings"
          }
        ],
        "units": "$",
        "values": {
          "max": 24100,
          "min": 24100,
          "avg": 24100,
          "total": 24100
        },
        "value": 24100
      },
      ...
    ]
  }
]

```

Getting All Entities Within a Market

Referenced Endpoint: [Entities \(on page 59\)](#)

Gets a list of all entities in the specified market. This request may be used to retrieve a list of entities used in a plan market.

Example: GET <https://10.10.10.10/api/v3/markets/2452692215536/entities>

Response: A list of ServiceEntityApiDTOs, representing the entities in the market. In this case, note that there is an attribute entitled `realtimeMarketReference` because these are entities from a plan market.

```

[
  {
    "links": [
      {

```

```

    "rel": "self",
    "href": "https://10.10.10.10/api/v3/entities/_QQVtEyi_EemDHtuQzfdzxw?include_aspects=false"
  }
],
"uuid": "_QQVtEyi_EemDHtuQzfdzxw",
"displayname": "osp-master-2",
"className": "VirtualMachine",
"priceIndex": 3.6063216,
"state": "ACTIVE",
"severity": "Normal",
"realtimeMarketReference": {
  "uuid": "42000c5d-9ae5-44f0-252c-daabbb423a86"
},
"environmentType": "ONPREM"
},
...
]

```

Getting Statistics of Entities Within a Market

Referenced Endpoint: [Stats \(on page 220\)](#)

Referenced Endpoint: [Entities \(on page 59\)](#)

Gets statistics related to entities in a specified market. For example, this request may be used to see the final calculated statistics for entities in a plan market. For more information about creating a filtered list of statistics, including example POSTs and responses, see *Filtered Statistics* in the [Statistics Endpoint \(on page 220\)](#).

Getting Statistics of a Specified Group of Entities Within a Market

Referenced Endpoint: [Stats \(on page 220\)](#)

Referenced Endpoint: [Groups \(on page 87\)](#)

Referenced Endpoint: [Entities \(on page 59\)](#)

Gets statistics related to a specific group of entities in a specified market. For example, this request may be used to see the final calculated statistics for a group of hosts in a plan market. For more information about creating a filtered list of statistics, including example POSTs and responses, see *Filtered Statistics* in the [Statistics Endpoint \(on page 220\)](#).

Getting Policies for a Market

Referenced Endpoint: [Policies \(on page 144\)](#)

Returns a list of all current policies affecting a specified market. For a plan market, this is a list of policies that you created, enabled, disabled, or changed in the plan configuration. For the real-time market, this is a list of policies currently available on your appliance. To get a single policy, include the UUID of the policy in the request.

Examples:

- All policies: GET <https://10.10.10.10/api/v3/markets/2481646239616/policies>
- One policy:

```
GET https://10.10.10.10/api/v3/markets/2481646239616/policies/_z3LKSTk0EemeycL7hWgJNw
```

Response: A list of PolicyApiDTOs representing the policies requested.

```
[
  {
    "links": [
      {

```

```

    "rel": "self",
    "href": "https://10.10.10.10/api/v3/policies/_z3LxVzk0EemeycL7hWgJNw"
  }
],
"uuid": "_z3LxVzk0EemeycL7hWgJNw",
"displayName": "DalTestPolMerge",
"type": "MERGE",
"name": "DalTestPolMerge",
"enabled": true,
"commodityType": "ClusterCommodity",
"mergeType": "Cluster",
"mergeGroups": [
  {
    "uuid": "91ff08749fd278925d73b61b0f0f69d79c99fc3a",
    "displayName": "Pms_Beta DC6\\Cluster-1",
    "className": "Group",
    "groupType": "PhysicalMachine",
    "isStatic": true,
    "logicalOperator": "AND"
  },
  {
    "uuid": "8c17d8e79c3db85ed5d3868de622cb89187849ce",
    "displayName": "Pms_Beta DC6\\Cluster-2",
    "className": "Group",
    "groupType": "PhysicalMachine",
    "isStatic": true,
    "logicalOperator": "AND"
  }
]
},
{
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/policies/_z3LKSTk0EemeycL7hWgJNw"
    }
  ],
  "uuid": "_z3LKSTk0EemeycL7hWgJNw",
  "displayName": "CommSegmentation/SegmentManager__4T_7kwY-Ed-WUKbEYSVIDw_1551123454966",
  "type": "MUST_RUN_TOGETHER",
  "name": "CommSegmentation/SegmentManager__4T_7kwY-Ed-WUKbEYSVIDw_1551123454966",
  "enabled": false,
  "capacity": 1000000000,
  "commodityType": "DrsSegmentationCommodity",
  "consumerGroup": {
    "uuid": "_z2M57Dk0EemeycL7hWgJNw",
    "displayName": "Buyers-Group-GROUP-DRS-KTG-rule/DC13-Cluster/vsphere-dc13.dev.mycorp.com",
    "className": "DiscoveredGroup",
    "groupType": "VirtualMachine",
    "isStatic": true,
    "logicalOperator": "AND"
  },
  "providerGroup": {
    "uuid": "_z2M57zk0EemeycL7hWgJNw",
    "displayName": "Sellers-Group-GROUP-DRS-KTG-rule/DC13-Cluster/vsphere-dc13.dev.mycorp.com",
    "className": "DiscoveredGroup",
    "groupType": "PhysicalMachine",
    "isStatic": true,
    "logicalOperator": "AND"
  }
},
...
]

```

Deleting a Placement Policy for a Market

Referenced Endpoint: [Policies \(on page 144\)](#)

Deletes the specified policy, given the UUID of the policy and the market. Note that if you delete an imported policy, it will reappear after the next discovery cycle of the target it was imported from. To delete imported policies, delete them on the target directly.

Example: DELETE `https://10.10.10.10/api/v3/markets/2481646239616/policies/_z3LxVzk0EemeycL7hWgJNw`

Response: A successful deletion request returns a Response Code of 200.

Getting Reservations for a Market

Referenced Endpoint: [Reservations \(on page 146\)](#)

Returns a list of all current reservations for a specified market. For the real-time market, this is a list of reservations currently active on your appliance.

Example: GET `https://10.10.10.10/api/v3/markets/Market/reservations`

Response: A list of DemandReservationApiDTOs representing any current reservations.

```
[
  {
    "uuid": "_I6z38Tk8EemeycL7hWgJNw",
    "displayName": "DalRes2",
    "count": 1,
    "status": "RESERVED",
    "reserveDateTime": "Mon Feb 25 15:30:07 EST 2019",
    "expireDateTime": "Mon Mar 25 08:29:54 EDT 2019",
    "deployDateTime": "Tue Mar 26 08:29:54 EDT 2019",
    "reserveCount": 1,
    "deployCount": 0,
    "demandEntities": [
      {
        "uuid": "_JEZRwTk8EemeycL7hWgJNw",
        "displayName": "DalRes2_C0",
        "className": "VirtualMachine",
        "template": {
          "uuid": "T-ef47f3dbdde39f888052332cbe7d0cf2",
          "displayName": "AVG:PMS_ACM\\ACM Cluster for last 10 days",
          "className": "VirtualMachineProfile"
        },
        "placements": {
          "computeResources": [
            {
              "stats": [
                {
                  "name": "numOfCpu",
                  "value": 2
                },
                {
                  "name": "cpuSpeed",
                  "units": "MHz",
                  "value": 5320
                },
                {
                  "name": "cpuConsumedFactor",
                  "units": "%",
                  "value": 4.2516437
                }
              ]
            }
          ]
        }
      }
    ]
  }
]
```


Response: A MarketApiDTO showing the new state of the market- if successful, COPYING.

```
{
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/markets/_ps_iUDlBEemeycL7hWgJNw"
    },
    {
      "rel": "Market notifications",
      "href": "https://10.10.10.10/api/v3/markets/_ps_iUDlBEemeycL7hWgJNw/notifications"
    },
    {
      "rel": "Market actions",
      "href": "https://10.10.10.10/api/v3/markets/_ps_iUDlBEemeycL7hWgJNw/actions?ascending=true"
    },
    {
      "rel": "To Entities",
      "href": "https://10.10.10.10/api/v3/markets/_ps_iUDlBEemeycL7hWgJNw/entities"
    },
    {
      "rel": "To Constraints",
      "href": "https://10.10.10.10/api/v3/markets/_ps_iUDlBEemeycL7hWgJNw/policies"
    },
    {
      "rel": "To Reservations",
      "href": "https://10.10.10.10/api/v3/markets/_ps_iUDlBEemeycL7hWgJNw/reservations"
    },
    {
      "rel": "To Statistics",
      "href": "https://10.10.10.10/api/v3/markets/_ps_iUDlBEemeycL7hWgJNw/stats"
    },
    {
      "rel": "To Unplaced Entities",
      "href": "https://10.10.10.10/api/v3/markets/_ps_iUDlBEemeycL7hWgJNw/unplacedentities"
    },
    {
      "rel": "To Market List",
      "href": "https://10.10.10.10/api/v3/markets"
    }
  ],
  "uuid": "_ps_iUDlBEemeycL7hWgJNw",
  "displayName": "API_Plan_Market",
  "className": "Market",
  "state": "COPYING",
  "scenario": {
    "uuid": "2452690315520",
    "displayName": "Add Workload 1",
    "owners": [
      ],
      "type": "ADD_WORKLOAD"
    },
    "unplacedEntities": false,
    "runDate": "2019-02-25T16:09:34-05:00",
    "environmentType": "ONPREM"
  }
}
```

Getting Statistics for a Market

Referenced Endpoint: [Stats \(on page 220\)](#)

Gets statistics about the specified market. This call can be used to see statistics from the real-time market, or to see the resultant statistics in a plan market after the scenario has been applied.

Example: GET `https://10.10.10.10/api/v3/markets/Market/stats`

Response: A list of `StatSnapshotApiDTOs` representing the statistics of the real-time market.

```
[
  {
    "displayName": "PMS",
    "date": "2019-02-23T00:00:00-05:00",
    "statistics": [
      {
        "name": "CPUHeadroom",
        "capacity": {
          "max": 8610,
          "min": 0,
          "avg": 1602.22,
          "total": 14420
        },
        "units": "VM",
        "values": {
          "max": 8595,
          "min": 0,
          "avg": 1571.44,
          "total": 14143
        },
        "value": 1571.44
      },
      {
        "name": "CPUExhaustion",
        "units": "Day",
        "values": {
          "max": 2147483650,
          "min": 0,
          "avg": 2147483650,
          "total": 2147483650
        },
        "value": 2147483650
      },
      ...
    ]
  },
  ...
]
```

Getting a Filtered List of Statistics for a Market

Referenced Endpoint: [Stats \(on page 220\)](#)

Gets a list of statistics about the specified market, filtered by the criteria in the `StatPeriodApiInputDTO` you must pass as an inputDTO to this request. For more information about creating a filtered list of statistics, including example POSTs and responses, see *Filtered Statistics* in the [Statistics Endpoint \(on page 220\)](#).

Example:

Example Input:

Response: An array of `StatSnapshotApiDTOs` representing the filtered statistics for the market.

Getting the Supply Chain for a Market

Referenced Endpoint: [Supply Chains \(on page 237\)](#)

Using one or more of the following parameters, you can filter the supply chain that is returned by this request:

Parameter	Description
market_Uuid	The UUID of the market whose supply chain will be returned
types	<p>The entity types whose supply chain will be returned. Choose from:</p> <ul style="list-style-type: none"> ▪ APPLICATION ▪ APPLICATION_SERVER ▪ BUSINESS_ACCOUNT ▪ BUSINESS_UNIT ▪ CHASSIS ▪ CLOUD_SERVICE ▪ CONTAINER ▪ CONTAINER_POD ▪ DATABASE ▪ DATABASE_SERVER ▪ DATACENTER ▪ DISK_ARRAY ▪ DPOD ▪ IO_MODULE ▪ LOAD_BALANCER ▪ LOGICAL_POOL ▪ NETWORK ▪ PHYSICAL_MACHINE ▪ STORAGE ▪ STORAGE_CONTROLLER ▪ SWITCH ▪ VIRTUAL_APPLICATION ▪ VIRTUAL_DATACENTER ▪ VIRTUAL_MACHINE ▪ VPOD
entity_states	<p>Only return entities in the specified states. Choose from:</p> <ul style="list-style-type: none"> ▪ ACTIVE: Entity is actively consuming resources. ▪ EVACUATED: Entity is ready to suspend and will not participate in the market, but will not generate a SUSPEND action.

Parameter	Description
	<p>NOTE: This state replaces the <code>SUSPEND</code> state, and requires additional configuration to enable. Workload Optimization Manager does not recommend enabling this state.</p> <ul style="list-style-type: none"> ▪ <code>FAILOVER:</code> This entity is reserved for failover and will not participate in the market. ▪ <code>IDLE:</code> Entity is powered off and not actively consuming market resources. ▪ <code>LAUNCH:</code> Entity is starting. ▪ <code>MAINTENANCE:</code> Entity is in maintenance mode. ▪ <code>NOT_MONITORED:</code> Entity is not currently monitored by Workload Optimization Manager. ▪ <code>QUEUED:</code> Entity is in the process of changing from one state to another. <p>NOTE: This state is internal to Workload Optimization Manager and will not appear in the UI, but may appear in an API response if the call is executed at the precise moment the entity is changing state.</p> <ul style="list-style-type: none"> ▪ <code>RESOURCE_ALLOCATION:</code> Cloud entity is being created. ▪ <code>RESOURCE_RELEASE:</code> Cloud Entity is being deleted. ▪ <code>SUSPEND:</code> Entity is suspended or the guest OS is in sleep, standby, or suspended state. The entity is not removed from the environment, but will not be used in market decisions. Based on market conditions, suspended entities can be started, re-adding them to the market. ▪ <code>SUSPEND_PENDING:</code> Entity is making preparations to suspend, or is the next entity of its type to suspend. ▪ <code>TERMINATE_PENDING:</code> Entity is in the process of being deleted. ▪ <code>UNKNOWN:</code> Workload Optimization Manager is unable to obtain the current state of the entity. This occurs when the entity is reported to the hypervisor as having a state of <code>DISCONNECTED</code>, <code>ORPHANED</code>, or <code>INVALID</code>.
environment_type	Only return actions that affect entities in the specified environment type. [<code>CLOUD</code> , <code>HYBRID</code> , <code>ONPREM</code>].

Parameter	Description
detail_type	The level of detail returned for each item in the returned supply chain. [compact , entity , aspects].
health	Return a small summary of the health of the returned supply chain.

Example: GET https://10.10.10.10/api/v3/markets/Market/supplychains?types=VirtualMachine&entity_states=RESOURCE_ALLOCATION&entity_states=ACTIVE&environment_type=ONPREM&detail_type=aspects

Response: A SupplychainApiDTO representing the entities meeting your criteria. In the above example, a supply chain including Virtual Machines in the ACTIVE or RESOURCE_ALLOCATION states, in an ONPREM environment, and a healthcheck will be included at the end of the request.

```
{
  "seMap": {
    "VirtualMachine": {
      "depth": -1,
      "entitiesCount": 335,
      "healthSummary": {
        "Major": 6,
        "Minor": 148,
        "Normal": 181
      },
      "stateSummary": {
        "ACTIVE": 335
      },
      "connectedProviderTypes": [
        "PhysicalMachine",
        "Storage",
        "VirtualDataCenter"
      ],
      "connectedConsumerTypes": [
        "Application"
      ],
      "instances": {
        "421edc7a-761d-9a79-9378-7140caecd50f": {
          "links": [
            {
              "rel": "self",
              "href": "https://10.10.10.10/api/v3/entities/421edc7a-761d-9a79-9378-7140caecd50f?include_aspects=false"
            }
          ],
          "uuid": "421edc7a-761d-9a79-9378-7140caecd50f",
          "displayName": "vm-max-test-netapp",
          "className": "VirtualMachine",
          "priceIndex": 1.0070138,
          "state": "ACTIVE",
          "severity": "Normal",
          "discoveredBy": {
            "uuid": "_8c98wBwnEem2J-ksdl1CgA",
            "displayName": "vsphere-dc7.dev.mycorp.com",
            "type": "vCenter"
          },
          "remoteId": "vm-281",
          "aspects": {
            "virtualMachineAspect": {
              "os": "SUSE Linux Enterprise 11 (64-bit)",
              "connectedNetworks": [
                {
                  "uuid": "7d6d67a50cfe1979797de159220841a37a55a50c",

```

```

    "displayName": "VM network"
  },
],
"numVCPUs": 1,
"ebsOptimized": false
},
},
"environmentType": "ONPREM"
...
]
...
...
}

```

Markets Endpoint Tips

Unplaced Entities

When running a plan in Workload Optimization Manager, you can add workload or remove infrastructure – if the remaining resources are insufficient for the workload, entities may be "unplaced". Workload Optimization Manager provides an array of the unplaced workloads.

NOTE: An example will be forthcoming.

Finding a Previously Run Plan Market

While the Workload Optimization Manager UI makes a plan look like one item, it is not. A plan comprises two parts:

- A scenario, which represents the configuration options for the plan. For more information about plan configuration, see [Scenarios \(on page 157\)](#).
- The plan market that is created when a scenario is run – this contains the actions, notifications, etc. that make up the state of the market after the plan.

The simplest way to discover a plan market is to execute the GET `https://10.10.10.10/api/v3/markets` and disregard the main market. The main market DTO entry will be similar to the following:

```

{
  "uuid": "777777",
  "displayName": "Market",
  "className": "Market",
  "state": "RUNNING",
  "stateProgress": 100,
  "unplacedEntities": false,
  "environmentType": "HYBRID"
}

```

The other markets that the request returns are plan markets. Plan market DTOs are similar to:

```

{
  "uuid": "214172431889696",
  "displayName": "Add Workload 2",
  "className": "Market",
  "state": "SUCCEEDED",
  "stateProgress": 100,
  "scenario": {

```

```
"uuid": "214172431885856",
"displayName": "Add Workload 2",
"owners": [
  {
    "uuid": "2993567556912",
    "showSharedUserSC": false
  }
]
...
}
```

The outer-most `uuid` and `displayName` parameters are the UUID and display name of plan market. The `state` field shows the results of the plan run, where `SUCCEEDED` means the plan finished successfully, and `FAILED` means the plan did not finish running- usually because it was cancelled by the user.

Within the plan itself, the `scenario` parameter includes information about the scenario used on the market. Note the inner `uuid` and `displayName` are the UUID and display name of the scenario, which you can use to see all markets created using this scenario.

Finally, iterating over the return of the `/markets` call above, and looking at each market and comparing the UUID of the scenario (in this case, 214172431889696), you can see how many times the scenario was run, and also each market containing the results of that run.

Notifications Endpoint

Notifications are system and market messages from your Workload Optimization Manager instance.

This endpoint contains references to start and end times for certain operations. For more information, including valid time formats, see [Time in the Workload Optimization Manager API \(on page 17\)](#)

Using the notifications endpoint, you can:

- Get all notifications
- Get a filtered list of notifications
- Get related actions for a specified notification

Notification Categories

Each notification from your Workload Optimization Manager instance belongs to a particular category of the following:

- Discovery
- Monitoring
- Control
- Mediation
- Healthcheck
- InterAppliance
- MarketAction
- MarketProblem
- Presentation
- Deploy
- Security

Notifications Requests

Getting Notifications

Gets a list of system and market level notifications. For a list of notifications, the API returns an array of LogEntryApiDTOs. Each LogEntryApiDTO will contain details about the notification, including the time, state, severity, and importance of the notification. To get a single notification, include the UUID of the notification in the request.

This request takes the following parameters:

start_time	The start time for a historic range of notifications.
end_time	The end time for a historic range of notifications.
category	The category of notifications to return. [Discovery, Monitoring, Control, Mediation, Healthcheck, InterAppliance, MarketAction, MarketProblem, Presentation, Deploy, Security]
cursor	When making subsequent calls to retrieve additional results, this is the cursor returned by the last call to this method.
limit	The maximum number of items to return. Must be a positive integer. If not set, the server will provide a default (20).
order_by	The field to order the results by. This value can be any field found in the response.
ascending	Default: true. When false, results will be in descending order.

Examples:

- **All Notifications (no parameters):** GET <https://10.10.10.10/api/v3/notifications>
- **All Notifications (parameters):** GET https://10.10.10.10/api/v3/notifications?start_time=1237056032&end_time=1238056032&limit=100&order_by=name&ascending=true
- **Single Notification:** GET https://10.10.10.10/api/v3/notifications/_5wcf4J5WEeinZ-6Uu4soUw

Response:

```
[
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/notifications/_5wcf4J5WEeinZ-6Uu4soUw"
      }
    ],
    "uuid": "_5wcf4J5WEeinZ-6Uu4soUw",
    "logActionTime": 1534095671518,
    "targetSE": "Hyper-V:hp-cluster.corp.mycorp.com",
    "category": "Discovery",
    "subCategory": "Validation",
    "description": "Validation of target hp-cluster.corp.mycorp.com failed",
    "shortDescription": "Validation Failed",
    "state": "NOTIFY",
    "severity": "MAJOR",
    "importance": 0
  },
  {
    "links": [
      {
        "rel": "self",
```

```

    "href": "https://10.10.10.10/api/v3/notifications/_sQ7xUJ5XEeinZ-6Uu4soUw"
  }
],
"uuid": "_sQ7xUJ5XEeinZ-6Uu4soUw",
"logActionTime": 1534096010470,
"targetSE": "Hyper-V:hp-cluster.corp.mycorp.com",
"category": "Discovery",
"subCategory": "Discovery",
"description": "Could not get domain for the 'hp-cluster.corp.mycorp.com' target",
"shortDescription": "Discovery failed",
"state": "NOTIFY",
"severity": "MAJOR",
"importance": 0
},
...
]

```

Policies Endpoint

Policies set business rules to control how Workload Optimization Manager analyzes resource allocation, how it displays resource status, and how it recommends or executes actions. There are two kinds of policies:

- **Placement Policies**
To modify workload placement decisions, Workload Optimization Manager divides its market into segments that constrain the valid placement of workloads. Workload Optimization Manager discovers placement rules that are defined by the targets in your environment, and you can create your own segments.
- **Automation Policies**
Workload Optimization Manager uses Automation Policies to guide its analysis and resulting actions. These policies can specify Action Automation, Orchestration, and Constraints (operational, utilization, and scaling constraints).

Workload Optimization Manager ships with default settings that we believe will give you the best results from our analysis and control. For some scopes of your environment, you might want to change these settings. For example, you might want to change action automation for that scope, or change the utilization constraints.

The hypervisors that you set as targets can include placement policies of their own. Workload Optimization Manager imports these placement policies, and you can choose to enable or disable them as you wish. By default, Workload Optimization Manager enables imported placement policies.

Using the policies endpoint, you can:

- Get API entry points for policies
- See details about a specific policy

Policies Utility Requests

Utility requests provide metadata that you can use to make related requests, assemble inputDTOs, or see the potential values of a particular DTO.

The policies endpoint contains a utility request that shows the entry points for policy-related requests. These can be used to find the UUID and details relating to a specific policy.

Example: GET <https://10.10.10.10/api/v3/policies>

Response: An array of Link objects, where each object contains a URL to get all policies for a specified market, entity, or group.

```

{
  "links": [

```



```

{
  "rel": "Market policies",
  "href": "https://10.10.10.10/api/v3/markets/{uuid}/policies"
},
{
  "rel": "Entity policies",
  "href": "https://10.10.10.10/api/v3/entities/{uuid}/policies"
},
{
  "rel": "Group policies",
  "href": "https://10.10.10.10/api/v3/groups/{uuid}/policies"
}
],
"enabled": false
}

```

Policies Requests

Getting the Details of a Specified Policy

The single policy request gets the details of a specified policy, given that policy's UUID. You may use this after getting policies that affect a certain scope, to view details of those policies.

Example: GET <https://10.10.10.10/api/v3/policies/104:domain-c7:10.10.111.111>

Response: A PolicyApiDTO describing details about the policy, including the group information for the provider of the policy.

```

{
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/policies/104:domain-c7:10.10.111.111"
    }
  ],
  "uuid": "104:domain-c7:10.10.111.111",
  "displayName": "GROUP-DRS-LN-rule/Cluster1/10.10.111.111",
  "type": "BIND_TO_GROUP",
  "name": "GROUP-DRS-LN-rule/Cluster1/10.10.111.111",
  "enabled": true,
  "capacity": 1000000000,
  "commodityType": "DrsSegmentationCommodity",
  "consumerGroup": {
    "uuid": "7843e134bab4fb841b9cb7dd98ef04acf1f36f7b",
    "displayName": "Buyers-Group-GROUP-DRS-vmGroup1/Cluster1/10.10.111.111",
    "className": "DiscoveredGroup",
    "groupType": "VirtualMachine",
    "isStatic": true,
    "logicalOperator": "AND"
  },
  "providerGroup": {
    "uuid": "597a35089bfe405291911f3191cf24234d4713d1",
    "displayName": "Sellers-Group-GROUP-DRS-hostGrp1/Cluster1/10.10.111.111",
    "className": "DiscoveredGroup",
    "groupType": "PhysicalMachine",
    "isStatic": true,
    "logicalOperator": "AND"
  }
}

```

Creating a Policy

Policies are created for a specific market- either a plan market, or the real-time market. For more information about policy creation, see the [Markets \(on page 120\)](#) endpoint.

Price Lists Utility Requests

Utility requests provide metadata that you can use to make related requests, assemble inputDTOs, or see the potential values of a particular DTO.

The price list endpoint contains a sample rate card file and RateCardApiDTO. To access this sample:

1. Execute the GET `https://10.10.10.10/api/v3/pricelists` request, and locate the price list whose `displayName` begins with `Sample Azure Rate Card`.
2. Record the UUID of this rate card.
3. Execute the `https://10.10.10.10/api/v3/pricelists/{uuid_from_step_2}/export` request, and download the file that makes up the response body.

Price Lists Requests

The price lists endpoint is not implemented at this time.

Reservations Endpoint

Workload Optimization Manager uses reservations to save the resources you will need if you want to deploy workloads at a future date. Workload Optimization Manager calculates optimal placement for these workloads, and then it reserves whatever resources the different hosts and storage entities will need to support those workloads. For example, you can instruct Workload Optimization Manager on 01 January to reserve the resources required for 100 workloads on 07 January.

Using the reservations endpoint of the Workload Optimization Manager API, you can:

- Get a list of reservations
- Create a reservation
- Get information about a specific reservation
- Delete a reservation

Reservation States

Reservations will be in one of the following states:

- **FUTURE**
The reservation is set to occur after the current date.
- **INITIAL**
The reservation is being created; occurs at the start time of the reservation.
- **INPROGRESS**
The reservation request has been sent to the market provider(s), and is awaiting results.
- **INVALID**

This error state occurs when a reservation is placed on an unready market (for example, when the market component is restarting) or one of the constraints or templates used in the reservation has been deleted between the creation of the reservation, and the start date.

- **PLACEMENT_FAILED**
The reservation has completed, but there were insufficient resources to place all entites.
- **RESERVED**
The reservation has completed and was able to obtain all needed resources.
- **UNFULFILLED**
The reservation has been added to the database, but has not yet been sent to the market.

Reservations in the Product

From the Workload Placement Page, you can set up reservations to save the resources you will need to deploy workloads at a future date. Workload Optimization Manager uses its intelligent workload management to calculate optimal placement for these workloads, and then it reserves whatever resources the different hosts and storage entities will need to support those workloads.

When creating a reservation in the product, you will select the VM template, any constraints (scope, policy, network), then give your reservation a name, virtual machine count, and start and end dates.

Reservations Requests

Getting Reservations

For a list of reservations, the API returns a list of DemandReservationApiDTOs. Each DemandReservationApiDTO will contain the entity information for the reserved instances, the count to be deployed, and current status. To get the DTO of a particular reservation, include the UUID in the request.

This request takes the following parameters:

Status	Returns only reservations in the specified status. [PLACEMENT_SUCCEEDED, PLACEMENT_FAILED, UNFULFILLED, RESERVED, DEPLOY_FAILED, DEPLOY_SUCCEEDED, FUTURE]
--------	--

Examples:

- All reservations with a status of **PLACEMENT_SUCCEEDED**:
GET https://10.10.10.10/api/v3/reservations?status=PLACEMENT_SUCCEEDED
- A single reservation:
GET https://10.10.10.10/api/v3/reservations/_TszrkcwHEei7A9DOcc4f1g

Response:

```
[
  {
    "uuid": "215446856141616",
    "displayName": "MyReservation",
    "count": 1,
    "status": "RESERVED",
    "reserveDateTime": "2022-11-01T13:28:00Z",
    "expireDateTime": "2022-12-01T14:28:00Z",
    "constraintInfos": [
      {
        "uuid": "74635127126226",
        "constraintType": "DATA_CENTER"
      }
    ]
  }
]
```

```

    }
  ],
  "reservationDeployed": false,
  "mode": "NO_GROUPING",
  "grouping": "NONE",
  "demandEntities": [
    {
      "template": {
        "uuid": "215364307544240",
        "displayName": "headroomVM",
        "className": "VirtualMachineProfile"
      },
      "placements": {
        "computeResources": [
          {
            "stats": [ ...
              Stats for CPU, CPUProvisioned, Mem, MemProvisioned, IOThroughput, NetThroughput
              ... ],
            "provider": {
              "uuid": "74635127126242",
              "displayName": "hp-dl3111.eng.vmturbo.com",
              "className": "PhysicalMachine"
            },
            "linkedResources": [
              {
                "uuid": "285741371272387",
                "displayName": "DC13/Physical Hosts_Cluster2 - Intel"
              }
            ]
          }
        ]
      },
      "storageResources": [
        {
          "stats": [ ...
            Stats for StorageProvisioned, StorageAmount, StorageAccess
            ... ],
          "provider": {
            "uuid": "74635124839222",
            "displayName": "QSGRID01:DC1314Shared",
            "className": "Storage"
          }
        }
      ]
    }
  ]
}
]

```

Creating a Placement Reservation

To create a placement reservation, POST a completed DemandReservationApiInputDTO as input to this request. The DTO specifies reservation type, the template to use, the UUIDs of constraints such as placement or network policies, and other attributes of the reservation.

Example: POST <https://10.10.10.10/api/v3/reservations>

Example inputDTO, to execute a reservation for two instances of a template:

```

{
  "demandName": "MyReservation1",
  "action": "RESERVATION",
  "mode": "NO_GROUPING",

```

```

"grouping": "NONE",
"reserveDateTime": "2022-11-01T21:03:22Z",
"expireDateTime": "2022-12-01T21:03:22Z",
"parameters": [
  {
    "placementParameters": {
      "count": 2,
      "templateID": "215364307544240",
      "entityNames": [
        "MyRes1_VM1",
        "MyRes1_VM2"
      ],
      "constraintIDs": [
        "285815619396128"
      ]
    }
  }
]
}
    
```

Response: A DemandReservationApiDTO that will include the status of the placement attempt. Note that the status of this reservation is FUTURE. When Workload Optimization Manager executes the reservation, if it succeeds in placing the reserved VMs then the placements field will contain descriptions of the host and storage providers for the two VMs.

```

{
  "uuid": "215447101807136",
  "displayName": "MyReservation1",
  "count": 2,
  "status": "FUTURE",
  "reserveDateTime": "2022-11-01T21:03:22Z",
  "expireDateTime": "2022-12-01T21:03:22Z",
  "constraintInfos": [
    {
      "uuid": "285815619396128",
      "constraintType": "POLICY"
    }
  ],
  "reservationDeployed": false,
  "mode": "NO_GROUPING",
  "grouping": "NONE",
  "demandEntities": [
    {
      "template": {
        "uuid": "215364307544240",
        "displayName": "headroomVM",
        "className": "VirtualMachineProfile"
      },
      "placements": {}
    },
    {
      "template": {
        "uuid": "215364307544240",
        "displayName": "headroomVM",
        "className": "VirtualMachineProfile"
      },
      "placements": {}
    }
  ]
}
    
```

Deleting a Reservation

Deletes the specified reservation and removes all reserved resources associated with that reservation. This will also remove any pending deployment related to the deleted reservation.

Example: DELETE `https://10.10.10.10/api/v3/reservations/_i-FLwdLiEeiuY7KDiLoLWg`

Response: A successful deletion request returns a Response Code of 200.

Reservations Endpoint Tips

Customizing a Reservation

When creating a reservation, you should be familiar with [placement policies \(on page 144\)](#), [templates \(on page 255\)](#), scope constraints, and network constraints.

NOTE:

Use network constraint to limit workload placement to the networks that Workload Optimization Manager discovered in your environment.

This request takes the following parameters of the `DemandReservationApiInputDTO`:

demandName

The display name of the reservation – If you do not specify names for the reserved workloads, they will all get this as the root name, with a numeric suffix. For example, `MyReservation1`, `MyReservation2`, etc.

action

The action type: This is always `RESERVATION`.

reserveDateTime

The time to calculate the workload placement and create the reservation – This time cannot be earlier than the time that you POST the reservation to the API.

expireDateTime

When to cancel the reservation. At this time, Workload Optimization Manager will delete the reservation. To take advantage of the reserved resources, you should deploy the actual VMs to their reserved locations before this time.

parameters

A `DemandReservationParametersDTO`, which is itself composed of a `PlacementParametersDTO` and `DeploymentParametersDTO`.

In order to pass a completed `DemandReservationParametersDTO`, you will create a `PlacementParametersDTO` with the following parameters:

count

The number of workloads in this reservation

templateID

The UUID of the template used for creating the workload required for the placement

entityNames

Name of the placed workload, which will be affixed with a numeric suffix for reservations of more than one workload

constraintIDs

The UUIDs of the scope, group and any policies or network constraints that the reservation will adhere to

For example, the following POST creates a reservation of 10 VMs, scoped to a specific virtual data center with a UUID of 73365042986774 and network with a UUID of 73365048169751. Because it does not specify `entityNames` (an array of names for the VMs), Workload Optimization Manager will generate the VM names.

```
{
  "action": "RESERVATION",
  "demandName": "DalReservation",
  "reserveDateTime": "2020-03-11T15:44:41Z",
  "expireDateTime": "2020-04-11T15:44:41Z",
  "parameters": [
    {
      "placementParameters": {
        "count": "10",
        "templateID": "214103358655713",
        "constraintIDs": [
          "73365042986774",
          "73365048169751"
        ]
      }
    }
  ]
}
```

Affinity Rules

When creating reservations, you can specify affinity rules for the reserved VMs, to ensure all the VMs in a reservation deploy to the same cluster. If you do not specify affinity, the VMs deploy to any clusters in the reservation's scope. These settings are optional, but if you choose to specify affinity, you must specify compatible values for both settings.

These setting respect other constraints you might have set for the reservation. For example, if you scope the reservation to a group of clusters, with a cluster affinity rule Workload Optimization Manager will choose one cluster from that scope and try to place all the VMs on it.

To specify affinity for a reservation, you declare:

- `mode` (optional):
Can be one of:
 - `AFFINITY` - Group reserved VMs in the same cluster. The `grouping` parameter must be set to `CLUSTER`. If there is no cluster that can host the requested VMs, the reservation will be `UNFULLFILLED`.
 - `NO_GROUPING` - Do not group reserved VMs in the same cluster. The `grouping` parameter must be set to `NONE`.
- `grouping` (optional):
Can be one of:
 - `CLUSTER` - Group reserved VMs. The `mode` parameter must be set to `CLUSTER`.
 - `NONE` - Do not group reserved VMs. The `mode` parameter must be set to `NO_GROUPING`.

```
{
  "demandName": "MyReservation1",
  "action": "RESERVATION",
  "mode": "AFFINITY",
  "grouping": "CLUSTER",
  ...
}
```

Getting Reservation Information

To get a list of current reservations, execute the GET <https://10.10.10.10/api/v3/reservations> request. This returns a list of all active reservations. If you know the UUID of the reservation you want to retrieve, you can pass it to get data for just that reservation.

Each reservation object describes:

- Display name
- Status – can be:
 - IN_PROGRESS – Placement calculation is in progress
 - PLACEMENT_SUCCEEDED – For a new reservation, the environment has sufficient resources to place the workload; if you specified a reserve date, this will be an active reservation
 - PLACEMENT_FAILED – For a newly created reservation, the environment doesn't have resources to place the workload; if you specified a reserve date, this will be an unfulfilled reservation
 - RETRYING – Workload Optimization Manager is trying to place the workload of an unfulfilled reservation
- Time the reservation was created, and time it will expire
- A description of the reserved workload
- Statistics for the compute and storage resources the reservation sets aside

For example, this listing shows a successful reservation for one VM:

```
{
  "uuid": "_kWZHIDDmEeePgeXuo0RRbw",
  "displayName": "MyReservation",
  "count": 1,
  "status": "PLACEMENT_SUCCEEDED",
  "reserveDateTime": "Thu May 04 16:27:29 UTC 2017",
  "expireDateTime": "Thu Aug 31 16:27:29 UTC 2017",
  "deployDateTime": "Thu Aug 31 16:27:29 UTC 2017",
  "reserveCount": 1,
  "demandEntities": [
    {
      "uuid": "_kWgb7TDmEeePgeXuo0RRbw",
      "displayName": "MyReservation_C0",
      "className": "VirtualMachine",
      "template": {
        "uuid": "T423f548d-cadc-e525-6df4-1f90724cf696",
        "displayName": "vsphere-dc3.dev.mycorp.com::TMP-SUSE64",
        "className": "VirtualMachineProfile"
      }
    },
    {
      "placements": {
        "computeResources": [
          {
            "stats": [
              {
                "name": "numOfCpu",
                "value": 1
              },
              {
                "name": "cpuSpeed",
                "value": 2603
              },
              {
                "name": "cpuConsumedFactor",
                "value": 0.5
              },
              {
                "name": "memorySize",
                "value": 2097152
              }
            ]
          }
        ]
      }
    }
  ]
}
```



```

    {
      "name": "memoryConsumedFactor",
      "value": 0.75
    },
    {
      "name": "ioThroughput",
      "value": 0
    },
    {
      "name": "networkThroughput",
      "value": 0
    }
  ],
  "provider": {
    "uuid": "Virtual_ESX_42381da5-12fa-1e82-2f1c-887419380d43",
    "displayName": "hp-esx21.corp.vmturbo.com",
    "className": "PhysicalMachine"
  }
},
"storageResources": [
  {
    "stats": [
      {
        "name": "diskSize",
        "value": 18432.363
      },
      {
        "name": "diskIops",
        "value": 0
      }
    ],
    "provider": {
      "uuid": "10545c15-7687ef26",
      "displayName": "QS2:ESXDC3DS1",
      "className": "Storage"
    }
  }
]
}
]
}
]
}
}

```

Creating a Reservation

To create a reservation, you POST an input DTO that defines the reservation's:

- **action:** The action type: RESERVATION
- **demandName:** The display name of the reservation – If you do not specify names for the added workloads, this will be the root name for new VMs
- **placementParameters:**
 - **constraintIDs:** An array of UUIDs for placement policies that will affect the calculated placement
 - **count:** The number of workloads to place
 - **entityNames:** An array of names for the placed VMs – The array length should equal **count**
 - **geographicRedundancy:** If **true** place the workloads on unique hosts, otherwise Workload Optimization Manager can place multiple workloads on the same host
 - **templateID:** The UUID of the template that you will use to place this workload – Note that the template must include a reference to the deployment profile that you specify in **deploymentParameters**

- `expireDateTime`: When to cancel a reservation if Workload Optimization Manager cannot place all the workloads by that date – for a `RESERVATION` action, Workload Optimization Manager automatically sets the deploy time to equal this time
- `reserveDateTime`: The time to calculate the workload placement and create the reservation – This time cannot be earlier than the time that you `POST` the reservation to the API

The following listing shows an input DTO that creates a reservation. It will place four workloads, and it gives specific names to each one.

```
{
  "action": "RESERVATION",
  "demandName": "MyReservation",
  "expireDateTime": "2017-10-10T12:38:17+00:00",
  "parameters": [
    {
      "deploymentParameters": {
        "deploymentProfileID": "_c9CJMDDAEeePgeXuo0RRbw"
      },
      "placementParameters": {
        "geographicRedundancy": false,
        "count": 4,
        "entityNames": [
          "foo", "bar", "baz", "bonk"
        ],
        "templateID": "_UKsnkJkSEeCHcOXEhzJExA"
      }
    }
  ],
  "reserveDateTime": "2017-05-04T18:22:12+00:00"
}
```

Reserved Instances Endpoint

Workload Optimization Manager analysis takes advantage of AWS Reserved Instances and Azure Reserved VM Instances to calculate optimal workload placement and to arrive at the best possible costs for your deployments on the cloud.

Using the reserved instances endpoint of the Workload Optimization Manager API, you can:

- Get a single reserved instance or list of reserved instances present in your environment
- Get statistics related to the reserved instances

Reserved Instances Requests

Getting Reserved Instances

For a list of reserved instances, the API returns an array of `ReservedInstanceApiDTOs`. Each `ReservedInstanceApiDTO` will contain the validation status, target type and category, and input field names and values. To get a single reserved instance, include the UUID of the reserved instance in the request.

This request takes the following parameters:

scope	Returns only reserved instances in the specified scope. This can be the scope of a group of entities or target. For example, to see reserved instances for a single AWS target, use that target's UUID here.
-------	--

Examples:

- All Reserved instances: GET <https://10.10.10.10/api/v3/reservedinstances>
- Reserved Instances for a Specified Scope: GET https://10.10.10.10//api/v3/reservedinstances?scope=_zeCtIMAVEei2-fP3xzx1Fw

Response:

```
[
  {
    "uuid": "aws::eu-west-1::RI::a0643140-85d7-4c5e-a7ba-4ec2fc47bb76",
    "displayName": "i3.large",
    "className": "ReservedInstance",
    "template": {
      "uuid": "aws::VMPROFILE::i3.large",
      "displayName": "i3.large",
      "discovered": false,
      "family": "i3"
    },
    "platform": "LINUX",
    "type": "STANDARD",
    "location": {
      "uuid": "aws::eu-west-1::DC::eu-west-1",
      "displayName": "aws-EU (Ireland)"
    },
    "accountId": "19265476245",
    "targetId": "_zeCtIMAVEei2-fP3xzx1Fw",
    "masterAccountId": "194356375",
    "term": {
      "units": "Year",
      "values": {
        "max": 1,
        "min": 1,
        "avg": 1,
        "total": 1
      },
      "value": 1
    },
    "payment": "PARTIAL_UPFRONT",
    "onDemandPrice": {
      "units": "$/h",
      "values": {
        "max": 0.172,
        "min": 0.172,
        "avg": 0.172,
        "total": 0.172
      },
      "value": 0.172
    },
    "costPrice": {
      "units": "$/h",
      "values": {
        "max": 0.11193608,
        "min": 0.11193608,
        "avg": 0.11193608,
        "total": 0.11193608
      },
      "value": 0.11193608
    },
    "coupons": {
      "capacity": {
        "max": 16,
        "min": 16,
        "avg": 16
      }
    }
  },
]
```

```

    "units": "RICoupon",
    "values": {
      "max": 0,
      "min": 0,
      "avg": 0,
      "total": 0
    },
    "value": 0
  },
  "totalCoupons": 0,
  "expDate": "Sat Apr 06 19:11:19 EDT 2019",
  "instanceCount": 1,
  "tenancy": "DEFAULT",
  "upFrontCost": 490,
  "actualHourlyCost": 0.0560000017285347,
  "effectiveHourlyCost": 0.11193607478789543
},
...
]

```

Getting Entities Covered by Reserved Instances

Given the UUID of a reserved instance, the API returns a list of entities covered by the reserved instance.

This request takes the following parameters:

reservedInstance_Uuid	The UUID of the reserved instance.
-----------------------	------------------------------------

Example: GET <https://10.10.10.10/api/v3/reservedinstances/1234/coveredEntities>

Response: An array of BaseApiDTOs describing the entities covered by the specified RI.

```

[
  {
    "uuid": "73943736161360",
    "displayName": "pyaus",
    "className": "VirtualMachine"
  },
  {
    "uuid": "73812178348464",
    "displayName": "ptaub807disabled",
    "className": "VirtualMachine"
  },
  {
    "uuid": "73746051159552",
    "displayName": "pymm",
    "className": "VirtualMachine"
  }
]

```

Roles Requests

The roles endpoint is not implemented at this time.

Scenarios Endpoint

To run a plan scenario, Workload Optimization Manager creates a snapshot copy of your real-time market and modifies that snapshot according to the scenario. It then uses the Economic Scheduling Engine to perform analysis on that plan market. A scenario can modify the snapshot market by changing the workload, adding or removing hardware resources, or changing or eliminating constraints such as cluster boundaries or placement policies.

As it runs a plan, Workload Optimization Manager continuously analyzes the plan market until it arrives at the optimal conditions that market can achieve. When it reaches that point, the Economic Scheduling Engine cannot find better prices for any of the resources demanded by the workload – the plan stops running, and it displays the results as the plan's desired state.

The display includes the resulting workload distribution across hosts and datastores, as well as a list of actions the plan executed to achieve the desired result.

For example, assume a scenario that adds virtual machines to a cluster. To run the plan, Workload Optimization Manager takes a snapshot of the current market, and adds the VMs to the specified cluster. Workload Optimization Manager then runs analysis on the plan market, where each entity in the supply chain shops for the resources it needs, always looking for a better price – looking for those resources from less-utilized suppliers. This analysis continues until all the resources are provided at the best possible price.

The results might show that you can add more workload to your environment, even if you reduce compute resources by suspending physical machines. The recommended actions would then indicate which hosts you can take offline, and how to distribute your virtual machines among the remaining hosts.

The settings you make in a scenario correspond to the plan settings you can make in the user interface. These include:

- Plan scope
- Changes to workload (adding, removing, or replacing VMs or containers)
- Changes to supply (adding, removing, replacing PMs or storage)
- Enable/disable placement policies and other constraints
- Changes to action modes
- Enable/disable provisioning of supply
- Enable/disable resizing of workloads

Using the scenarios endpoint of the Workload Optimization Manager API, you can:

- Get a list of scenarios on your instance
- Create a scenario
- Get a list of markets that are connected to a particular scenario

Scenarios Requests

Getting Scenarios

The API returns a ScenarioApiDTO including the following fields when you execute a `GET /scenarios` request:

- `uuid`
The unique identifier for this scenario.
- `displayName`
By default, Workload Optimization Manager creates a display name that matches the scenario type. You may rename the scenario after creation using a PUT request.
- `owners`
An array of user accounts that can use the scenario. Currently, this is always the user that created the scenario.
- `type`

The type of scenario. When a user creates a scenario in the GUI, this matches the given type that user chooses from the Plan Wizard.

- **scope**
An array of scope objects to specify the scope of the plan.
- **projectionDays**
An array of days to specify how far into the future to project the plan. For example, a value of [30 , 60 , 120] would return projections after one, two, and four months, respectively.
- **topologyChanges**
An array of additions or deletions to the set of entities in the plan scope.
- **loadChanges**
An array of changes to the utilization percentage for different groups of entities within the plan scope.
- **configChanges**
An array of configuration changes for different groups of entities within the plan scope.
- **changes** - DEPRECATED
An array of scenario settings that make changes to the market before running the plan.

Example: GET https://10.10.10.10/api/v3/scenarios?show_all=false

Response:

```
{
  "uuid": "214704587455872",
  "displayName": "Migrate to Public Cloud 1_CLOUD_MIGRATION_CONSUMPTION",
  "type": "CLOUD_MIGRATION",
  "scope": [
    {
      "uuid": "73935388327649",
      "displayName": "aws-EU (Frankfurt)",
      "className": "Region"
    }
  ],
  "projectionDays": [
    0
  ],
  "topologyChanges": {
    "migrateList": [
      {
        "projectionDay": 0,
        "source": {
          "uuid": "285041726554576",
          "displayName": "Unknown"
        },
        "destination": {
          "uuid": "73935388327649",
          "displayName": "aws-EU (Frankfurt)",
          "className": "Region",
          "state": "ACTIVE",
          "severity": "Minor",
          "discoveredBy": {
            "uuid": "73935444966640",
            "displayName": "testmachine",
            "category": "Public Cloud",
            "type": "AWS",
            "readonly": false
          }
        },
        "severityBreakdown": {
          "MINOR": 1
        }
      }
    ],
  },
}
```

```

    "numRelatedVMs": 2,
    "environmentType": "CLOUD",
    "vendorIds": {
      "vmturboamp": "aws::eu-central-1::DC::eu-central-1"
    }
  },
  "sources": [
    {
      "uuid": "285041726554576",
      "displayName": "Unknown"
    }
  ],
  "destinations": [
    {
      "uuid": "73935388327649",
      "displayName": "aws-EU (Frankfurt)",
      "className": "Region",
      "state": "ACTIVE",
      "severity": "Minor",
      "discoveredBy": {
        "uuid": "73935444966640",
        "displayName": "testmachine",
        "category": "Public Cloud",
        "type": "AWS",
        "readonly": false
      },
      "severityBreakdown": {
        "MINOR": 1
      },
      "numRelatedVMs": 2,
      "environmentType": "CLOUD",
      "vendorIds": {
        "vmturboamp": "aws::eu-central-1::DC::eu-central-1"
      }
    }
  ],
  "destinationEntityType": "VirtualMachine",
  "removeNonMigratingWorkloads": true
}
]
},
"loadChanges": {
  "utilizationList": [],
  "maxUtilizationList": []
},
"configChanges": {
  "addPolicyList": [],
  "removePolicyList": [],
  "automationSettingList": [],
  "removeConstraintList": [],
  "riSettingList": [
    {
      "uuid": "ri.aws.preferredOfferingClass",
      "displayName": "Type",
      "value": "STANDARD",
      "valueObjectType": "String"
    },
    {
      "uuid": "ri.aws.preferredPaymentOption",
      "displayName": "Payment",
      "value": "ALL_UPFRONT",
      "valueObjectType": "String"
    },
    {
      "uuid": "ri.aws.preferredTerm",

```

```
    "displayName": "Term",
    "value": "YEARS_1",
    "valueObjectType": "String"
  }
],
"osMigrationSettingList": [
  {
    "uuid": "linuxTargetOs",
    "displayName": "linuxTargetOs",
    "value": "LINUX",
    "valueObjectType": "String"
  },
  {
    "uuid": "linuxByol",
    "displayName": "linuxByol",
    "value": "false",
    "valueObjectType": "String"
  },
  {
    "uuid": "rhelTargetOs",
    "displayName": "rhelTargetOs",
    "value": "RHEL",
    "valueObjectType": "String"
  },
  {
    "uuid": "rhelByol",
    "displayName": "rhelByol",
    "value": "false",
    "valueObjectType": "String"
  },
  {
    "uuid": "slesTargetOs",
    "displayName": "slesTargetOs",
    "value": "SLES",
    "valueObjectType": "String"
  },
  {
    "uuid": "slesByol",
    "displayName": "slesByol",
    "value": "false",
    "valueObjectType": "String"
  },
  {
    "uuid": "windowsTargetOs",
    "displayName": "windowsTargetOs",
    "value": "WINDOWS",
    "valueObjectType": "String"
  },
  {
    "uuid": "windowsByol",
    "displayName": "windowsByol",
    "value": "false",
    "valueObjectType": "String"
  },
  {
    "uuid": "selectedMigrationProfileOption",
    "displayName": "selectedMigrationProfileOption",
    "value": "MATCH_SOURCE_TO_TARGET_OS",
    "valueObjectType": "String"
  },
  {
    "uuid": "matchToSource",
    "displayName": "matchToSource",
    "value": "true",
    "valueObjectType": "String"
  }
]
```



```

    }
  ],
  "includedCoupons": {
    "includedCouponOidsList": [],
    "iswhiteList": true
  },
  "subscription": {
    "uuid": "73935382668544",
    "displayName": "EngineeringSample",
    "className": "BusinessAccount",
    "accountId": "323871187550",
    "master": false,
    "cloudType": "AWS",
    "riSupported": false,
    "hasRelatedTarget": false
  }
}
}
}

```

Creating a Scenario

In order to create a scenario, see the [Scenario DTO Breakdown \(on page 161\)](#). For examples of complete ScenarioApiDTOs, see [Scenario Configuration Examples \(on page 173\)](#).

Deleting a Scenario

Deletes the specified scenario. Note that this does not delete plan markets you create using that scenario.

Example: DELETE https://10.10.10.10/api/v3/scenarios/__xwWYAE3EeiNKPbzHdETIA

Response: A successful deletion request returns a Response Code of 200.

Scenario DTO Breakdown

Scenario DTO Overview

A scenario DTO assembles configuration settings that you use to set up and run a plan. To run a plan, you will POST the scenario to a market. For most plans, this will be the real-time market. In the case of a plan-over-plan, this will be the market created from the first scenario.

Workload Optimization Manager will then run a plan based on the combination of the scenario and the market state.

These configuration settings fall into one of several groups:

Name (DTO)	Description
Configuration Changes (ConfigChangesApiDTO)	Adding and removing placement policies, removing constraints, and providing automation settings, OS migration settings, reserved instance settings, and associated business units.
Load Changes (LoadChangesApiDTO)	Modifications to the current and max utilization values, and peak baseline values.
Time-Based Topology Changes (TimeBasedTopologyChangesApiDTO)	Settings to include reserved VMs and periodically add historical workload to the environment.

Name (DTO)	Description
Topology Changes (Topology-ChangesApiDTO)	Settings to add, remove, replace, and migrate workload, or to specify the clusters for an Alleviate Pressure plan.

DTO Configuration Changes

The scenario configuration changes, located in the `configChanges` parameter of the `ScenarioApiDTO`, enable you to perform the following tasks:

Parameter	Description
<code>addPolicyList</code>	Add a placement policy to the market generated for this plan.
<code>automationSettingList</code>	Change one of the available automation plan settings: VM Resize, Host Provision/Suspend, and Storage Provision/Suspend.
<code>osMigrationSettingList</code>	For a Migrate to Cloud plan, this parameter will contain the source and destination OS platforms, and their BYOL (Bring Your Own License) status.
<code>removeConstraintList</code>	Remove a constraint from the market generated for this plan.
<code>removePolicyList</code>	Remove a placement policy from the market generated for this plan.
<code>riSettingList</code>	Add information about your reserved cloud instances.
<code>subscription</code>	Associate a business unit to the plan.

Adding and Removing Placement Policies

Referenced Endpoint: [Policies \(on page 144\)](#)

When running plans, you might want to see what your environment would look like with or without certain policies enabled, or with a new policy present. You can see the effects of these changes by passing the UUIDs of current policies, or a `PolicyApiDTO` for a new policy.

Example input (Current Policies):

```
"addPolicyList": [
  {
    "uuid": "_VnNS0CsqEemvEL3szcXU1Q",
    "uuid": "522a3317-39f5-1a97-3b53-d725927a6ae8",
    "uuid": "52672058-a93b-d0a9-bbd9-5acd33f27882"
  }
]
```

Example input (New Policy):

```
"addPolicyList": [
  {
    "capacity": null,
    "consumerGroup": {
      "uuid": "8c17d8e79c3db85ed5d3868de622cb89187849ce",
      "displayName": "PMs_Beta DC6\\Cluster-2",
      "className": "Group",
      "groupType": "PhysicalMachine",
    }
  }
]
```

```

        "isStatic": true,
        "logicalOperator": "AND"
    },
    "enabled": true,
    "mergeGroups": null,
    "mergeType": null,
    "name": "DalTestPolMerge",
    "displayName": "DalTestPolMerge",
    "providerGroup": {
        "uuid": "91ff08749fd278925d73b61b0f0f69d79c99fc3a",
        "displayName": "Pms_Beta DC6\\Cluster-1",
        "className": "Group",
        "groupType": "PhysicalMachine",
        "isStatic": true,
        "logicalOperator": "AND"
    },
    "type": "MERGE",
    "uuid": ""
}
]

```

Setting Plan Automation Settings

Use the plan automation settings to see the effect of your scenario if VM resizes, Host Provisioning / Suspension, and Storage Provisioning / Suspension are enabled or disabled.

Example Input:

```

"automationSettingList":[
  {
    "uuid":"resize",
    "displayName":"Resize for VMS disabled",
    "value":"false",
    "entityType":"VirtualMachine"
  },
  {
    "uuid":"provisionPM",
    "displayName":"Provision for PHYSICALMACHINES disabled",
    "value":"false",
    "entityType":"PhysicalMachine"
  },
  {
    "uuid":"suspendPM",
    "displayName":"Suspend for PHYSICALMACHINES disabled",
    "value":"false",
    "entityType":"PhysicalMachine"
  },
  {
    "uuid":"provisionDS",
    "displayName":"Provision for STS disabled",
    "value":"false",
    "entityType":"Storage"
  },
  {
    "uuid":"suspendDS",
    "displayName":"Suspend for STS enabled",
    "value":"true",
    "entityType":"Storage"
  }
]

```

Additionally, you can use these settings to adjust operational constraints, such as provisioned values for CPU and MEM:

Example Input:

```
"automationSettingList":[
  {
    "uuid":"capacity_MemProvisioned",
    "displayName":"Mem Overprovisioned Percentage",
    "value":"9876.0",
    "defaultValue":"1000.0",
    "categories":[
      "utilizationThresholds"
    ],
    "valueType":"NUMERIC",
    "min":1,
    "max":1000000,
    "entityType":"PhysicalMachine",
    "sourceGroupName":"Global"
  }
]
```

Providing Cloud Reserved Instance Information

Workload Optimization Manager enables you to upload RI pricing information specific to the scenario.

Example Input:

```
"riSettingList": [
  {
    "uuid": "preferredTerm",
    "displayName": "Term",
    "value": "YEARS_1",
    "entityType": "YEARS_1"
  },
  {
    "uuid": "preferredPaymentOption",
    "displayName": "Payment",
    "value": "PARTIAL_UPFRONT",
    "entityType": "PARTIAL_UPFRONT"
  },
  {
    "uuid": "preferredOfferingClass",
    "displayName": "Type",
    "value": "STANDARD",
    "entityType": "STANDARD"
  },
  {
    "uuid": "preferredCoverage",
    "displayName": "Coverage",
    "value": "80",
    "entityType": "80"
  },
  {
    "uuid": "riCoverageOverride",
    "displayName": "RI Coverage Override",
    "value": "false",
    "entityType": "false"
  }
]
```

Removing Constraints

Referenced Endpoint: [Entities \(on page 59\)](#)

When running plans, you might want to see what your environment would look like with or without certain constraints. For example, if a group of virtual machines was allowed to move to any cluster of your environment.

In order to remove a constraint, you must know its UUID. To get a list of constraints for this entity, execute the `/entities/ENTITY_UUID/constraints` request for the entity whose constraint you wish to remove.

```
"removeConstraintList":[
  {
    "constraintType":"ClusterCommodity",
    "projectionDay":0,
    "target":{
      "uuid":"a6d365f4fbf03fb9a2e8cdb29e38045e31cee41b",
      "displayName":"Beta DC6_vm",
      "className":"VirtualMachine"
    }
  }
]
```

Setting OS Migration Settings for a Migrate to Cloud Plan

When performing a Migrate to Cloud plan, you might want to use custom OS migration settings. You can specify both the OS mapping, and the BYOL (bring your own license) status of each OS in the mapping.

Example Input:

```
"osMigrationSettingList":[
  {
    "uuid":"linuxTargetOs",
    "displayName":"linuxTargetOs",
    "value":"LINUX"
  },
  {
    "uuid":"linuxByol",
    "displayName":"linuxByol",
    "value":"true"
  },
  {
    "uuid":"rhelTargetOs",
    "displayName":"rhelTargetOs",
    "value":"RHEL"
  },
  {
    "uuid":"rhelByol",
    "displayName":"rhelByol",
    "value":"false"
  },
  {
    "uuid":"slesTargetOs",
    "displayName":"slesTargetOs",
    "value":"WINDOWS"
  },
  {
    "uuid":"slesByol",
    "displayName":"slesByol",
    "value":"true"
  },
  {
    "uuid":"windowsTargetOs",
    "displayName":"windowsTargetOs",
    "value":"WINDOWS"
  },
  {
    "uuid":"windowsByol",

```

```

    "displayName": "windowsByol",
    "value": "true"
  },
  {
    "uuid": "showMatchSourceToTargetOsOption",
    "displayName": "showMatchSourceToTargetOsOption",
    "value": "true"
  },
  {
    "uuid": "showByolOption",
    "displayName": "showByolOption",
    "value": "false"
  },
  {
    "uuid": "showCustomOsOption",
    "displayName": "showCustomOsOption",
    "value": "true"
  },
  {
    "uuid": "matchToSource",
    "displayName": "matchToSource",
    "value": "false"
  },
  {
    "uuid": "selectedMigrationProfileOption",
    "displayName": "selectedMigrationProfileOption",
    "value": "CUSTOM_OS"
  }
]

```

Scenario DTO Load Changes

The scenario load changes, located in the `loadChanges` parameter of the `ScenarioApiDTO`, make workload utilization changes that enable you to change the following values:

Parameter	Description
<code>baselineDate</code>	If your plan should be run using historical data, the date of the data to be used.
<code>maxUtilizationList</code>	Changes the max utilization values for a group of entities in your plan.
<code>peakBaselineList</code>	Changes the peak baseline values for a group of entities in your plan.
<code>utilizationList</code>	Changes the utilization values for a group of entities in your plan.

Changing the Baseline Date

Example input:

```
"baselineDate": 1552622400000
```

Changing the Utilization For a Group of Entities

Example input:

```
"utilizationList": [
  {
```

```

    "percentage": -12,
    "projectionDay": 0,
    "target": {
      "displayName": "Global Environment",
      "uuid": "Market"
    }
  }
]

```

Changing the Maximum Utilization For a Group of Entities

Example input:

```

"maxUtilizationList": [
  {
    "maxPercentage": 82,
    "projectionDay": 0,
    "target": {
      "displayName": "All On-prem Hosts",
      "className": "Group",
      "uuid": "_PE0v-YEUEee_hYfzgV9uYg"
    }
  },
  {
    "maxPercentage": 85,
    "projectionDay": 0,
    "target": {
      "displayName": "ACM_datastore",
      "className": "Group",
      "uuid": "c31a6f99f4409700115fc61fca71e5449ad68700"
    }
  },
  {
    "maxPercentage": 77,
    "projectionDay": 0,
    "target": {
      "displayName": "Beta DC6_datastore",
      "className": "Group",
      "uuid": "5544c35ed3d7fc0d33879d3457c219d7e40fc176"
    }
  }
]
}

```

Scenario DTO Time-Based Topology Changes

The scenario time-based topology changes, located in the `timebasedTopologyChanges` parameter of the `ScenarioApiDTO`, make time-dependent topology changes to your scenario, such as:

Parameter	Description
<code>addHistoryVMs</code>	If <code>true</code> , Workload Optimization Manager will add additional workload to your scenario each month equal to the workload added to the real-time market in the previous month.
<code>includeReservation</code>	If <code>true</code> , Workload Optimization Manager will take current reservations and reflect their resource utilization when the scenario runs.

Adding Historical VM Usage and/or Including VM Reservations

Example input:

```
"timebasedTopologyChanges": [
  {
    "addHistoryVMs": "true",
    "includeReservation": "true"
  }
]
```

Scenario DTO Topology Changes

The scenario topology changes, located in the `topologyChanges` parameter of the `ScenarioApiDTO`, make topology changes to your scenario, such as:

Parameter	Description
<code>addList</code>	A list of entities to add to your environment as part of plan configuration.
<code>migrateList</code>	A list of entities to move from one set of providers to another as part of plan configuration.
<code>relievePressureList</code>	In a Relieve Pressure plan, the source and target clusters.
<code>removeList</code>	A list of entities to be removed from your environment as part of plan configuration.
<code>replaceList</code>	A list of entities and the templates to replace them in your environment as part of plan configuration.

Adding Workload

Adding workload to a scenario simulates the effect of increased VM or container density in your environment. You can add multiple copies of VM groups or individual VMs.

Example input:

```
"addList": [
  {
    "count": 3,
    "projectionDays": [
      0
    ],
    "target": {
      "uuid": "421dd4ce-a4c1-231a-71e7-64fbf598bc65",
      "displayName": "AJ_Test",
      "className": "VirtualMachine"
    }
  },
  {
    "count": 10,
    "projectionDays": [
      0
    ],
    "target": {
      "uuid": "421e503d-d0c0-75f9-8cce-79421924a90d",
      "displayName": "olg_test",
      "className": "VirtualMachine"
    }
  }
]
```



```

    "count": 5,
    "projectionDays": [
      0
    ],
    "target": {
      "uuid": "420f1840-297f-5a39-9543-b72046b9126f",
      "displayName": "opensuse_with_stress_template",
      "className": "VirtualMachine"
    }
  },
  {
    "count": 1,
    "projectionDays": [
      0
    ],
    "target": {
      "uuid": "53523c9a4c5d67962a96f90f59456b0c3e72aca0",
      "displayName": "Development67_vm",
      "className": "VirtualMachine"
    }
  }
]

```

Migrating Workload to the Cloud

Workload Optimization Manager includes a special plan to simulate migration of on-premise workload to the cloud, or migration of workloads from one cloud to another. This plan focuses on optimizing your costs on the cloud by choosing the best templates (most adequate compute resources) and regions to host your workloads. If analysis discovers on-premise workloads that are good candidates for Reserved Instances (RIs), then it recommends migrating to those templates, and can even recommend purchasing more RI capacity. For each group of virtual machines to be migrated (source), you must provide a destination.

Example input:

```

"migrateList": [
  {
    "projectionDay": 0,
    "source": {
      "uuid": "4656c0ba6b976d05d1a9470ee673672022e8e926",
      "displayName": "ACM_vm",
      "className": "VirtualMachine",
      "severity": "Major"
    },
    "destination": {
      "uuid": "GROUP-PMsByTargetType_Azure",
      "displayName": "PMs_Azure",
      "className": "PhysicalMachine"
    }
  },
  {
    "projectionDay": 0,
    "source": {
      "uuid": "fe23c8642efc5ad2ed4fa1cc502dfb179b8dc9d2",
      "displayName": "Development DC1_vm",
      "className": "VirtualMachine",
      "severity": "Major"
    },
    "destination": {
      "uuid": "GROUP-PMsByTargetType_Azure",
      "displayName": "PMs_Azure",
      "className": "PhysicalMachine"
    }
  }
]

```

```

    "projectionDay": 0,
    "source": {
      "uuid": "f0e26cb417d8143173270b7f01c7213e027cd9e5",
      "displayName": "Development DC7_vm",
      "className": "VirtualMachine",
      "severity": "Major"
    },
    "destination": {
      "uuid": "GROUP-PMsByTargetType_Azure",
      "displayName": "PMs_Azure",
      "className": "PhysicalMachine"
    }
  }
]

```

Relieve Pressure

Including this parameter creates an Alleviate Pressure plan to find out how to migrate workloads from a stressed or hot cluster over to a cluster with more headroom.

Example input:

```

"relievePressureList": [
  {
    "projectionDay": 0,
    "sources": [
      {
        "uuid": "11c63ebd77647e7b9c9fb85dd2d4c77464cbeac2",
        "displayName": "DC13\\DC13-Cluster",
        "className": "Cluster"
      }
    ],
    "destinations": [
      {
        "uuid": "57a4026a69ba4b46ebc430cb62d5c55eeea00695",
        "displayName": "DC13\\Physical Hosts_Cluster2 - Intel",
        "className": "Cluster"
      }
    ]
  }
]

```

Removing Workload

Removing workload in a scenario configuration simulates the effect of decreased VM or container density in your environment. You can remove VM groups or individual VMs.

Example input:

```

"removeList": [
  {
    "projectionDay": 0,
    "target": {
      "uuid": "5E4F6056-8783-45BC-9070-35CF09457E98",
      "displayName": "AH-TestHyperV-VM001",
      "className": "VirtualMachine"
    }
  },
  {
    "projectionDay": 0,
    "target": {
      "uuid": "421d62c2-964a-0f4f-32cb-ec4cec9e26db",

```

```

    "displayName": "Anshuman_MidServer",
    "className": "VirtualMachine"
  },
  {
    "projectionDay": 0,
    "target": {
      "uuid": "421e048b-f66b-539c-f743-7dcc7b40943b",
      "displayName": "Gilad_XL_Storage_Testing - Pure-1",
      "className": "VirtualMachine"
    }
  },
  {
    "projectionDay": 0,
    "target": {
      "uuid": "421e9199-7159-04f2-29fc-6a501f44d1be",
      "displayName": "Gilad_XL_Storage_Testing - Pure-2",
      "className": "VirtualMachine"
    }
  },
  {
    "projectionDay": 0,
    "target": {
      "uuid": "421d9ec6-ab97-84d0-4b12-2db88ae43e2a",
      "displayName": "MS-SQLServer-3",
      "className": "VirtualMachine"
    }
  }
]

```

Replacing Workload

When you replace workload, you select one or more VMs or containers that you want to change (target), and then you select a template to use in their place.

Example input:

```

"replaceList": [
  {
    "projectionDay": 0,
    "target": {
      "uuid": "421ef003-e152-5a25-6e03-19698340cd01",
      "displayName": "centos_imp_7",
      "className": "VirtualMachine",
      "severity": "Minor"
    },
    "template": {
      "uuid": "_wIBz8Jj4EeC6nYMiQT1jqA",
      "displayName": "Microsoft_SQL2008-small",
      "className": "VirtualMachineProfile"
    }
  },
  {
    "projectionDay": 0,
    "target": {
      "uuid": "42001807-bc8f-b144-8ff6-eb0d0d32cc7a",
      "displayName": "cheuk-OpsMgr-172.113",
      "className": "VirtualMachine",
      "severity": "Minor"
    },
    "template": {
      "uuid": "_wIBz8Jj4EeC6nYMiQT1jqA",
      "displayName": "Microsoft_SQL2008-small",
      "className": "VirtualMachineProfile"
    }
  }
]

```

```

    }
  },
  {
    "projectionDay": 0,
    "target": {
      "uuid": "4211806a-65f2-8be1-1015-a4abela2ab6f",
      "displayName": "dim-dc13amd-6.2.7_01",
      "className": "VirtualMachine",
      "severity": "Minor"
    },
    "template": {
      "uuid": "_wIBz8Jj4EeC6nYMiQT1jqA",
      "displayName": "Microsoft_SQL2008-small",
      "className": "VirtualMachineProfile"
    }
  },
  {
    "projectionDay": 0,
    "target": {
      "uuid": "42008beb-264e-b0f6-2295-f3443e4ce7d6",
      "displayName": "enOpenShiftInfra1",
      "className": "VirtualMachine",
      "severity": "Minor"
    },
    "template": {
      "uuid": "_wIBz8Jj4EeC6nYMiQT1jqA",
      "displayName": "Microsoft_SQL2008-small",
      "className": "VirtualMachineProfile"
    }
  },
  {
    "projectionDay": 0,
    "target": {
      "uuid": "420036f6-27c3-0252-439d-e23bcff63d02",
      "displayName": "enOpenShiftInfra2",
      "className": "VirtualMachine",
      "severity": "Minor"
    },
    "template": {
      "uuid": "_wIBz8Jj4EeC6nYMiQT1jqA",
      "displayName": "Microsoft_SQL2008-small",
      "className": "VirtualMachineProfile"
    }
  },
  {
    "projectionDay": 0,
    "target": {
      "uuid": "4200ba09-71eb-3084-026e-1770c23abaa4",
      "displayName": "enOpenshiftDNS",
      "className": "VirtualMachine",
      "severity": "Minor"
    },
    "template": {
      "uuid": "_wIBz8Jj4EeC6nYMiQT1jqA",
      "displayName": "Microsoft_SQL2008-small",
      "className": "VirtualMachineProfile"
    }
  }
]

```

Scenario Configuration Examples

Basic Scenario POSTs and Responses

Most scenarios consist of multiple configuration changes. However, the UI provides several starting points for custom configuration based on plan type.

Workload Optimization Manager provides the same starting point in the API via the `/scenarios` endpoint and the following list of POST calls and server responses:

The following examples are simplified in order to accomplish a single goal. There are many other options you might choose in conjunction with those in the following examples.

Add Workload

POST:

```
{
  "configChanges": {
    "addPolicyList": [],
    "automationSettingList": [],
    "removeConstraintList": [],
    "removePolicyList": [],
    "riSettingList": [],
    "osMigrationSettingList": [],
    "subscription": {}
  },
  "displayName": "Add Workload- Basic",
  "loadChanges": {
    "utilizationList": [],
    "maxUtilizationList": []
  },
  "projectionDays": [
    0
  ],
  "scope": [
    {
      "uuid": "Market",
      "displayName": "Global Environment",
      "className": "Market"
    }
  ],
  "topologyChanges": {
    "addList": [
      {
        "count": 50,
        "projectionDays": [
          0
        ],
        "target": {
          "uuid": "421dd4ce-a4c1-231a-71e7-64fbf598bc65",
          "displayName": "AJ_Test",
          "className": "VirtualMachine"
        }
      }
    ]
  },
  "migrateList": [],
  "removeList": [],
  "replaceList": [],
  "relievePressureList": []
},
"type": "ADD_WORKLOAD"
```

}

Response:

```
{
  "uuid": "2502057162928",
  "displayName": "Add Workload- Basic",
  "owners": [
    {
      "uuid": "_4T_7kWY-Ed-WUKbEYSVIDw",
      "username": "administrator",
      "showSharedUserSC": false
    }
  ],
  "type": "ADD_WORKLOAD",
  "scope": [
    {
      "uuid": "_0x3OYUg1Ed-gHc4L513yOA",
      "displayName": "Market",
      "className": "Market"
    }
  ],
  "projectionDays": [
    0
  ],
  "topologyChanges": {
    "addList": [
      {
        "projectionDays": [
          0
        ],
        "target": {
          "uuid": "421dd4ce-a4c1-231a-71e7-64fbf598bc65",
          "displayName": "AJ_Test",
          "className": "VirtualMachine"
        },
        "count": 50
      }
    ]
  },
  "loadChanges": {},
  "configChanges": {},
  "changes": [
    {
      "index": 1,
      "type": "SCOPE",
      "scope": [
        {
          "uuid": "_0x3OYUg1Ed-gHc4L513yOA",
          "displayName": "Market",
          "className": "Market"
        }
      ]
    },
    {
      "index": 2,
      "type": "PROJECTION_PERIODS",
      "projectionDays": [
        0
      ]
    },
    {
      "index": 3,
      "type": "ADDED",

```

```

        "description": "50 AJ_Test",
        "targets": [
          {
            "uuid": "421dd4ce-a4c1-231a-71e7-64fbf598bc65",
            "displayName": "AJ_Test",
            "className": "VirtualMachine",
            "severity": "Major"
          }
        ],
        "value": "50",
        "projectionDays": [
          0
        ]
      }
    ],
    "timebasedTopologyChanges": {}
  }
}

```

Decommission Hosts

POST:

```

{
  "configChanges": {
    "addPolicyList": [],
    "automationSettingList": [
      {
        "uuid": "provisionPM",
        "displayName": "PROVISION for PHYSICALMACHINES disabled",
        "value": "false",
        "entityType": "PhysicalMachine"
      }
    ],
    "removeConstraintList": [],
    "removePolicyList": [],
    "riSettingList": [],
    "osMigrationSettingList": [],
    "subscription": {}
  },
  "displayName": "Decommission Hosts- Basic",
  "loadChanges": {
    "utilizationList": [],
    "maxUtilizationList": []
  },
  "projectionDays": [
    0
  ],
  "scope": [
    {
      "uuid": "Market",
      "displayName": "Global Environment",
      "className": "Market"
    }
  ],
  "topologyChanges": {
    "addList": [],
    "migrateList": [],
    "removeList": [
      {
        "projectionDay": 0,
        "target": {
          "uuid": "4C4C4544-0042-5A10-804A-B1C04F384331",
          "displayName": "dell-pe1944.corp.vmturbo.com",
          "className": "PhysicalMachine"
        }
      }
    ]
  }
}

```

```

    }
  },
  {
    "projectionDay": 0,
    "target": {
      "uuid": "4C4C4544-004A-3610-8057-C8C04F464331",
      "displayName": "dell-pe1953.corp.vmturbo.com",
      "className": "PhysicalMachine"
    }
  },
  {
    "projectionDay": 0,
    "target": {
      "uuid": "4C4C4544-0059-4D10-8030-B3C04F464331",
      "displayName": "dell-pe1954.corp.vmturbo.com",
      "className": "PhysicalMachine"
    }
  }
],
"replaceList": [],
"relievePressureList": []
},
"type": "DECOMMISSION_HOST"
}

```

Response:

```

{
  "uuid": "2502061312640",
  "displayName": "Decommission Hosts- Basic",
  "owners": [
    {
      "uuid": "_4T_7kwY-Ed-WUKbEYSVIDw",
      "username": "administrator",
      "showSharedUserSC": false
    }
  ],
  "type": "DECOMMISSION_HOST",
  "scope": [
    {
      "uuid": "_0x30YUglEd-gHc4L513yOA",
      "displayName": "Market",
      "className": "Market"
    }
  ],
  "projectionDays": [
    0
  ],
  "topologyChanges": {
    "removeList": [
      {
        "projectionDay": 0,
        "target": {
          "uuid": "4C4C4544-0042-5A10-804A-B1C04F384331",
          "displayName": "dell-pe1944.corp.vmturbo.com",
          "className": "PhysicalMachine"
        }
      }
    ],
    {
      "projectionDay": 0,
      "target": {
        "uuid": "4C4C4544-004A-3610-8057-C8C04F464331",
        "displayName": "dell-pe1953.corp.vmturbo.com",
        "className": "PhysicalMachine"
      }
    }
  ]
}

```



```

    }
  },
  {
    "projectionDay": 0,
    "target": {
      "uuid": "4C4C4544-0059-4D10-8030-B3C04F464331",
      "displayName": "dell-pe1954.corp.vmturbo.com",
      "className": "PhysicalMachine"
    }
  }
]
},
"loadChanges": {},
"configChanges": {
  "automationSettingList": [
    {
      "uuid": "provisionPM",
      "displayName": "Provision",
      "value": "false",
      "defaultValue": "RECOMMEND",
      "valueType": "STRING",
      "options": [
        {
          "label": "Disabled",
          "value": "DISABLED"
        },
        {
          "label": "Recommend",
          "value": "RECOMMEND"
        },
        {
          "label": "Manual",
          "value": "MANUAL"
        },
        {
          "label": "Automated",
          "value": "AUTOMATIC"
        }
      ]
    },
    {
      "entityType": "PhysicalMachine",
      "sourceGroupName": "Global"
    }
  ]
},
"changes": [
  {
    "index": 1,
    "type": "SCOPE",
    "scope": [
      {
        "uuid": "_0x30YUg1Ed-gHc4L513yOA",
        "displayName": "Market",
        "className": "Market"
      }
    ]
  },
  {
    "index": 2,
    "type": "PROJECTION_PERIODS",
    "projectionDays": [
      0
    ]
  },
  {
    "index": 3,

```

```

"type": "REMOVED",
"description": "dell-pe1944.corp.vmturbo.com",
"targets": [
  {
    "uuid": "4C4C4544-0042-5A10-804A-B1C04F384331",
    "displayName": "dell-pe1944.corp.vmturbo.com",
    "className": "PhysicalMachine",
    "severity": "Critical"
  }
],
"value": "1",
"projectionDays": [
  0
]
},
{
  "index": 4,
  "type": "REMOVED",
  "description": "dell-pe1953.corp.vmturbo.com",
  "targets": [
    {
      "uuid": "4C4C4544-004A-3610-8057-C8C04F464331",
      "displayName": "dell-pe1953.corp.vmturbo.com",
      "className": "PhysicalMachine",
      "severity": "Critical"
    }
  ],
  "value": "1",
  "projectionDays": [
    0
  ]
},
{
  "index": 5,
  "type": "REMOVED",
  "description": "dell-pe1954.corp.vmturbo.com",
  "targets": [
    {
      "uuid": "4C4C4544-0059-4D10-8030-B3C04F464331",
      "displayName": "dell-pe1954.corp.vmturbo.com",
      "className": "PhysicalMachine",
      "severity": "Critical"
    }
  ],
  "value": "1",
  "projectionDays": [
    0
  ]
},
{
  "index": 6,
  "type": "SET_ACTION_SETTING",
  "description": "Provision for PhysicalMachine disabled",
  "targets": [
    {
      "uuid": "PhysicalMachine"
    }
  ],
  "value": "PhysicalMachine",
  "enable": false,
  "name": "provision",
  "projectionDays": [
    0
  ]
}

```

```

],
"timebasedTopologyChanges": {}
}

```

Migrate to Cloud

POST:

```

{
  "configChanges": {
    "addPolicyList": [],
    "automationSettingList": [],
    "removeConstraintList": [],
    "removePolicyList": [],
    "riSettingList": [],
    "osMigrationSettingList": [],
    "subscription": {}
  },
  "displayName": "Migrate to Public Cloud- Basic",
  "loadChanges": {
    "utilizationList": [],
    "maxUtilizationList": []
  },
  "projectionDays": [
    0
  ],
  "scope": [
    {
      "uuid": "4656c0ba6b976d05d1a9470ee673672022e8e926",
      "displayName": "ACM_vm",
      "groupType": "VirtualMachine",
      "className": "Group"
    },
    {
      "uuid": "_lRrTYB--EeewItqBJctLGw",
      "displayName": "All Cloud Zones",
      "groupType": "PhysicalMachine",
      "className": "Group"
    }
  ],
  "topologyChanges": {
    "addList": [],
    "migrateList": [
      {
        "projectionDay": 0,
        "source": {
          "uuid": "4656c0ba6b976d05d1a9470ee673672022e8e926",
          "displayName": "ACM_vm",
          "className": "VirtualMachine"
        },
        "destination": {
          "uuid": "_lRrTYB--EeewItqBJctLGw",
          "displayName": "All Cloud Zones",
          "className": "PhysicalMachine"
        }
      }
    ],
    "removeList": [
      {
        "projectionDay": 0,
        "target": {
          "uuid": "_nuoxwETSEemi-4wSMHOOWA",
          "displayName": "All VMs In All Cloud Zones",
          "className": "VirtualMachine"
        }
      }
    ]
  }
}

```

```

    }
  ],
  "replaceList": [],
  "relievePressureList": []
},
"type": "CLOUD_MIGRATION"
}

```

Response:

```

{
  "uuid": "2502081867536",
  "displayName": "Migrate to Public Cloud- Basic",
  "owners": [
    {
      "uuid": "_4T_7kwY-Ed-WUKbEYSVIDw",
      "username": "administrator",
      "showSharedUserSC": false
    }
  ],
  "type": "CLOUD_MIGRATION",
  "scope": [
    {
      "uuid": "4656c0ba6b976d05d1a9470ee673672022e8e926",
      "displayName": "ACM_vm",
      "className": "Group",
      "groupType": "VirtualMachine",
      "isStatic": true,
      "logicalOperator": "AND"
    },
    {
      "uuid": "_lRrTYB--EewItqBJctLGw",
      "displayName": "All Cloud Zones",
      "className": "Group",
      "groupType": "PhysicalMachine",
      "isStatic": true,
      "logicalOperator": "AND"
    }
  ],
  "projectionDays": [
    0
  ],
  "topologyChanges": {
    "removeList": [
      {
        "projectionDay": 0,
        "target": {
          "uuid": "_nuoxwETSEemi-4wSMHOOWA",
          "displayName": "All VMs In All Cloud Zones",
          "className": "Group"
        }
      }
    ]
  },
  "migrateList": [
    {
      "projectionDay": 0,
      "source": {
        "uuid": "4656c0ba6b976d05d1a9470ee673672022e8e926",
        "displayName": "ACM_vm",
        "className": "Group"
      },
      "destination": {
        "uuid": "_lRrTYB--EewItqBJctLGw",

```

```

        "displayName": "All Cloud Zones",
        "className": "Group"
    }
}
]
},
"loadChanges": {},
"configChanges": {
    "osMigrationSettingList": [
        {
            "uuid": "matchToSource",
            "value": "true"
        }
    ]
},
"changes": [
    {
        "index": 1,
        "type": "SCOPE",
        "scope": [
            {
                "uuid": "4656c0ba6b976d05d1a9470ee673672022e8e926",
                "displayName": "ACM_vm",
                "className": "Group",
                "entitiesCount": 83,
                "groupType": "VirtualMachine",
                "severity": "Major",
                "logicalOperator": "AND"
            },
            {
                "uuid": "_lRrTYB--EeewItqBJctLGw",
                "displayName": "All Cloud Zones",
                "className": "Group",
                "entitiesCount": 78,
                "groupType": "PhysicalMachine",
                "severity": "Normal",
                "logicalOperator": "AND"
            }
        ]
    },
    {
        "index": 2,
        "type": "PROJECTION_PERIODS",
        "projectionDays": [
            0
        ]
    },
    {
        "index": 3,
        "type": "REMOVED",
        "description": "All VMs In All Cloud Zones",
        "targets": [
            {
                "uuid": "_nuoxwETSEemi-4wSMHOOWA",
                "displayName": "All VMs In All Cloud Zones",
                "className": "Group",
                "entitiesCount": 154,
                "groupType": "VirtualMachine",
                "severity": "Major",
                "logicalOperator": "AND"
            }
        ]
    },
    {
        "value": "1",
        "projectionDays": [
            0
        ]
    }
]

```

```

    ]
  },
  {
    "index": 4,
    "type": "MIGRATION",
    "description": "Migrate [ACM_vm] to All Cloud Zones",
    "targets": [
      {
        "uuid": "4656c0ba6b976d05d1a9470ee673672022e8e926",
        "displayName": "ACM_vm",
        "className": "Group",
        "entitiesCount": 83,
        "groupType": "VirtualMachine",
        "severity": "Major",
        "logicalOperator": "AND"
      },
      {
        "uuid": "_lRrTYB--EeewItqBJctLGw",
        "displayName": "All Cloud Zones",
        "className": "Group",
        "entitiesCount": 78,
        "groupType": "PhysicalMachine",
        "severity": "Normal",
        "logicalOperator": "AND"
      }
    ],
    "projectionDays": [
      0
    ]
  },
  {
    "index": 5,
    "type": "SET_TARGET_OS",
    "targets": [
      {
        "uuid": "4656c0ba6b976d05d1a9470ee673672022e8e926",
        "displayName": "ACM_vm",
        "className": "Group",
        "entitiesCount": 83,
        "groupType": "VirtualMachine",
        "severity": "Major",
        "logicalOperator": "AND"
      }
    ],
    "projectionDays": [
      0
    ]
  }
],
"timebasedTopologyChanges": {}
}

```

Optimize Cloud

POST:

```

{
  "configChanges": {
    "addPolicyList": [],
    "automationSettingList": [
      {
        "uuid": "resize",
        "displayName": "resize for VMS enabled",
        "value": "true",

```

```

        "entityType": "VirtualMachine"
    }
],
"removeConstraintList": [],
"removePolicyList": [],
"riSettingList": [
    {
        "uuid": "preferredOfferingClass",
        "displayName": "Type",
        "value": "STANDARD",
        "entityType": "STANDARD"
    },
    {
        "uuid": "preferredTerm",
        "displayName": "Term",
        "value": "YEARS_3",
        "entityType": "YEARS_3"
    },
    {
        "uuid": "preferredPaymentOption",
        "displayName": "Payment",
        "value": "ALL_UPFRONT",
        "entityType": "ALL_UPFRONT"
    },
    {
        "uuid": "preferredCoverage",
        "displayName": "Coverage",
        "value": "80",
        "entityType": "80"
    },
    {
        "uuid": "riCoverageOverride",
        "displayName": "RI Coverage Override",
        "value": "false",
        "entityType": "false"
    }
],
"osMigrationSettingList": [],
"subscription": {}
},
"displayName": "Optimize Cloud- Basic",
"loadChanges": {
    "utilizationList": [],
    "maxUtilizationList": []
},
"projectionDays": [
    0
],
"scope": [
    {
        "uuid": "GROUP-PMsByTargetType_AWS",
        "displayName": "PMs_AWS",
        "groupType": "PhysicalMachine",
        "className": "Group"
    }
],
"topologyChanges": {
    "addList": [],
    "migrateList": [],
    "removeList": [],
    "replaceList": [],
    "relievePressureList": []
},
"type": "OPTIMIZE_CLOUD"

```

}

Response:

```
{
  "uuid": "2502117573632",
  "displayName": "Optimize Cloud- Basic",
  "owners": [
    {
      "uuid": "_4T_7kwY-Ed-WUKbEYSVIDw",
      "username": "administrator",
      "showSharedUserSC": false
    }
  ],
  "type": "OPTIMIZE_CLOUD",
  "scope": [
    {
      "uuid": "be95c99fc2a2195ac896204766a52d0e141818a6",
      "displayName": "PMs_AWS",
      "className": "Group",
      "groupType": "PhysicalMachine",
      "isStatic": true,
      "logicalOperator": "AND"
    }
  ],
  "projectionDays": [
    0
  ],
  "topologyChanges": {},
  "loadChanges": {},
  "configChanges": {
    "automationSettingList": [
      {
        "uuid": "resize",
        "displayName": "resize",
        "value": "true"
      }
    ]
  },
  "riSettingList": [
    {
      "uuid": "preferredPaymentOption",
      "displayName": "Payment",
      "value": "ALL_UPFRONT",
      "defaultValue": "ALL_UPFRONT",
      "valueType": "STRING",
      "options": [
        {
          "label": "ALL_UPFRONT",
          "value": "ALL_UPFRONT"
        },
        {
          "label": "PARTIAL_UPFRONT",
          "value": "PARTIAL_UPFRONT"
        },
        {
          "label": "NO_UPFRONT",
          "value": "NO_UPFRONT"
        }
      ]
    }
  ],
  "sourceGroupName": "Global"
},
{
  "uuid": "preferredTerm",
  "displayName": "Term",

```



```

        "value": "YEARS_3",
        "defaultValue": "YEARS_1",
        "valueType": "STRING",
        "options": [
            {
                "label": "YEARS_1",
                "value": "YEARS_1"
            },
            {
                "label": "YEARS_3",
                "value": "YEARS_3"
            }
        ],
        "sourceGroupName": "Global"
    },
    {
        "uuid": "preferredCoverage",
        "displayName": "Coverage",
        "value": "80",
        "defaultValue": "80",
        "valueType": "NUMERIC",
        "min": 0,
        "max": 100,
        "sourceGroupName": "Global"
    },
    {
        "uuid": "riCoverageOverride",
        "displayName": "RI Coverage Override",
        "value": "false",
        "defaultValue": "false",
        "valueType": "BOOLEAN",
        "sourceGroupName": "Global"
    },
    {
        "uuid": "preferredOfferingClass",
        "displayName": "Type",
        "value": "STANDARD",
        "defaultValue": "STANDARD",
        "valueType": "STRING",
        "options": [
            {
                "label": "STANDARD",
                "value": "STANDARD"
            },
            {
                "label": "CONVERTIBLE",
                "value": "CONVERTIBLE"
            }
        ],
        "sourceGroupName": "Global"
    }
]
},
"changes": [
    {
        "index": 1,
        "type": "SCOPE",
        "scope": [
            {
                "uuid": "be95c99fc2a2195ac896204766a52d0e141818a6",
                "displayName": "PMS_AWS",
                "className": "Group",
                "entitiesCount": 50,
                "groupType": "PhysicalMachine",
                "severity": "Normal",
            }
        ]
    }
]

```

```

        "logicalOperator": "AND"
      }
    ]
  },
  {
    "index": 2,
    "type": "PROJECTION_PERIODS",
    "projectionDays": [
      0
    ]
  },
  {
    "index": 3,
    "type": "ENABLED",
    "description": "Resize enabled",
    "targets": [],
    "enable": true,
    "projectionDays": [
      0
    ]
  },
  {
    "index": 4,
    "type": "RI_SETTINGS",
    "targets": [
      {
        "uuid": "preferredPaymentOption|ALL_UPFRONT"
      },
      {
        "uuid": "preferredTerm|YEARS_3"
      },
      {
        "uuid": "preferredCoverage|80"
      },
      {
        "uuid": "riCoverageOverride|false"
      },
      {
        "uuid": "preferredOfferingClass|STANDARD"
      }
    ],
    "projectionDays": [
      0
    ]
  }
],
"timebasedTopologyChanges": {}
}

```

On-Prem Workload Migration (Cluster to Cluster)

POST:

```

{
  "configChanges": {
    "addPolicyList": [],
    "automationSettingList": [],
    "removeConstraintList": [],
    "removePolicyList": [],
    "riSettingList": [],
    "osMigrationSettingList": [],
    "subscription": {}
  },
  "displayName": "On-Prem Workload Migration 1",

```

```

"loadChanges": {
  "utilizationList": [],
  "maxUtilizationList": []
},
"projectionDays": [
  0
],
"scope": [
  {
    "uuid": "3e47ff3351f3247367c00c08fdc5bb974695c443",
    "displayName": "DC23-Datacenter\\DC23-cluster1",
    "groupType": "PhysicalMachine",
    "className": "Cluster"
  }
],
"topologyChanges": {
  "addList": [
    {
      "count": 1,
      "projectionDays": [
        0
      ],
      "target": {
        "uuid": "67d24a6f265151876e87f39475fb4ee4b4170098",
        "displayName": "AvailabilitySet::ARSEN-AVS-NCUS",
        "className": "VirtualMachine"
      }
    }
  ],
  "migrateList": [],
  "removeList": [],
  "replaceList": [],
  "relievePressureList": []
},
"type": "WORKLOAD_MIGRATION"
}
    
```

Response:

```

{
  "uuid": "2502063893936",
  "displayName": "On-Prem Workload Migration- Basic",
  "owners": [
    {
      "uuid": "_4T_7kwY-Ed-WUKbEYSVIDw",
      "username": "administrator",
      "showSharedUserSC": false
    }
  ],
  "type": "WORKLOAD_MIGRATION",
  "scope": [
    {
      "uuid": "_0x3OYUg1Ed-gHc4L513yOA",
      "displayName": "Market",
      "className": "Market"
    }
  ],
  "projectionDays": [
    0
  ],
  "topologyChanges": {
    "addList": [
      {
        "projectionDays": [
          0
        ]
      }
    ]
  }
}
    
```

```

    0
  ],
  "target": {
    "uuid": "a6d365f4fbf03fb9a2e8cdb29e38045e31cee41b",
    "displayName": "Beta DC6_vm",
    "className": "Group"
  },
  "count": 1
}
]
},
"loadChanges": {},
"configChanges": {},
"changes": [
  {
    "index": 1,
    "type": "SCOPE",
    "scope": [
      {
        "uuid": "_0x30YUglEd-gHc4L513yOA",
        "displayName": "Market",
        "className": "Market"
      }
    ]
  },
  {
    "index": 2,
    "type": "PROJECTION_PERIODS",
    "projectionDays": [
      0
    ]
  },
  {
    "index": 3,
    "type": "ADDED",
    "description": "1 Beta DC6_vm",
    "targets": [
      {
        "uuid": "a6d365f4fbf03fb9a2e8cdb29e38045e31cee41b",
        "displayName": "Beta DC6_vm",
        "className": "Group",
        "entitiesCount": 56,
        "groupType": "VirtualMachine",
        "severity": "Major",
        "logicalOperator": "AND"
      }
    ],
    "value": "1",
    "projectionDays": [
      0
    ]
  }
],
"timebasedTopologyChanges": {}
}

```

Hardware Refresh

POST:

```

{
  "configChanges": {
    "addPolicyList": [],
    "automationSettingList": [],

```

```

"removeConstraintList": [],
"removePolicyList": [],
"riSettingList": [],
"osMigrationSettingList": [],
"subscription": {}
},
"displayName": "Hardware Refresh- Basic",
"loadChanges": {
  "utilizationList": [],
  "maxUtilizationList": []
},
"projectionDays": [
  0
],
"scope": [
  {
    "uuid": "Market",
    "displayName": "Global Environment",
    "className": "Market"
  }
],
"topologyChanges": {
  "addList": [],
  "migrateList": [],
  "removeList": [],
  "replaceList": [
    {
      "projectionDay": 0,
      "target": {
        "uuid": "4C4C4544-0042-5A10-804A-B1C04F384331",
        "displayName": "dell-pe1944.corp.vmturbo.com",
        "className": "PhysicalMachine",
        "severity": "Critical"
      },
      "template": {
        "uuid": "_juCtwJkfEeCX4rLBy_KD2g",
        "displayName": "HP_DL580 G7",
        "className": "PhysicalMachineProfile"
      }
    },
    {
      "projectionDay": 0,
      "target": {
        "uuid": "4C4C4544-004A-3610-8057-C8C04F464331",
        "displayName": "dell-pe1953.corp.vmturbo.com",
        "className": "PhysicalMachine",
        "severity": "Critical"
      },
      "template": {
        "uuid": "_juCtwJkfEeCX4rLBy_KD2g",
        "displayName": "HP_DL580 G7",
        "className": "PhysicalMachineProfile"
      }
    },
    {
      "projectionDay": 0,
      "target": {
        "uuid": "4C4C4544-0059-4D10-8030-B3C04F464331",
        "displayName": "dell-pe1954.corp.vmturbo.com",
        "className": "PhysicalMachine",
        "severity": "Critical"
      },
      "template": {
        "uuid": "_juCtwJkfEeCX4rLBy_KD2g",
        "displayName": "HP_DL580 G7",

```

```

        "className": "PhysicalMachineProfile"
    },
    {
        "projectionDay": 0,
        "target": {
            "uuid": "Virtual_ESX_4238e933-3923-8334-37fe-3aec8fbd046f",
            "displayName": "hp-esx22.dev.mycorp.com",
            "className": "PhysicalMachine",
            "severity": "Critical"
        },
        "template": {
            "uuid": "_juCtwJkfEeCX4rLBy_KD2g",
            "displayName": "HP_DL580 G7",
            "className": "PhysicalMachineProfile"
        }
    }
],
"relievePressureList": []
},
"type": "RECONFIGURE_HARDWARE"
}

```

Response:

```

{
  "uuid": "2502070918448",
  "displayName": "Hardware Refresh- Basic",
  "owners": [
    {
      "uuid": "_4T_7kwY-Ed-WUKbEYSVIDw",
      "username": "administrator",
      "showSharedUserSC": false
    }
  ],
  "type": "RECONFIGURE_HARDWARE",
  "scope": [
    {
      "uuid": "_0x30YUg1Ed-gHc4L513yOA",
      "displayName": "Market",
      "className": "Market"
    }
  ],
  "projectionDays": [
    0
  ],
  "topologyChanges": {
    "replaceList": [
      {
        "projectionDay": 0,
        "target": {
          "uuid": "4C4C4544-0042-5A10-804A-B1C04F384331",
          "displayName": "dell-pe1944.corp.vmturbo.com",
          "className": "PhysicalMachine"
        },
        "template": {
          "uuid": "_juCtwJkfEeCX4rLBy_KD2g",
          "displayName": "HP_DL580 G7",
          "className": "PhysicalMachineProfile"
        }
      }
    ]
  },
  {
    "projectionDay": 0,
    "target": {

```

```

    "uuid": "4C4C4544-004A-3610-8057-C8C04F464331",
    "displayName": "dell-pe1953.corp.vmturbo.com",
    "className": "PhysicalMachine"
  },
  "template": {
    "uuid": "_juCtwJkfEeCX4rLBy_KD2g",
    "displayName": "HP_DL580 G7",
    "className": "PhysicalMachineProfile"
  }
},
{
  "projectionDay": 0,
  "target": {
    "uuid": "4C4C4544-0059-4D10-8030-B3C04F464331",
    "displayName": "dell-pe1954.corp.vmturbo.com",
    "className": "PhysicalMachine"
  },
  "template": {
    "uuid": "_juCtwJkfEeCX4rLBy_KD2g",
    "displayName": "HP_DL580 G7",
    "className": "PhysicalMachineProfile"
  }
},
{
  "projectionDay": 0,
  "target": {
    "uuid": "Virtual_ESX_4238e933-3923-8334-37fe-3aec8fbd046f",
    "displayName": "hp-esx22.dev.mycorp.com",
    "className": "PhysicalMachine"
  },
  "template": {
    "uuid": "_juCtwJkfEeCX4rLBy_KD2g",
    "displayName": "HP_DL580 G7",
    "className": "PhysicalMachineProfile"
  }
}
]
},
"loadChanges": {},
"configChanges": {},
"changes": [
  {
    "index": 1,
    "type": "SCOPE",
    "scope": [
      {
        "uuid": "_0x30YUgled-gHc4L513yOA",
        "displayName": "Market",
        "className": "Market"
      }
    ]
  },
  {
    "index": 2,
    "type": "PROJECTION_PERIODS",
    "projectionDays": [
      0
    ]
  },
  {
    "index": 3,
    "type": "REPLACED",
    "description": "Replace [dell-pe1944.corp.vmturbo.com, dell-pe1953.corp.vmturbo.com, dell-pe1954.corp.vmturbo.com, hp-esx... with HP_DL580 G7",
    "targets": [

```

```

    {
      "uuid": "4C4C4544-0042-5A10-804A-B1C04F384331",
      "displayName": "dell-pe1944.corp.vmturbo.com",
      "className": "PhysicalMachine",
      "severity": "Critical"
    },
    {
      "uuid": "4C4C4544-004A-3610-8057-C8C04F464331",
      "displayName": "dell-pe1953.corp.vmturbo.com",
      "className": "PhysicalMachine",
      "severity": "Critical"
    },
    {
      "uuid": "4C4C4544-0059-4D10-8030-B3C04F464331",
      "displayName": "dell-pe1954.corp.vmturbo.com",
      "className": "PhysicalMachine",
      "severity": "Critical"
    },
    {
      "uuid": "Virtual_ESX_4238e933-3923-8334-37fe-3aec8fbd046f",
      "displayName": "hp-esx22.dev.mycorp.com",
      "className": "PhysicalMachine",
      "severity": "Critical"
    },
    {
      "uuid": "_juCtwJkfEeCX4rLBy_KD2g",
      "displayName": "HP_DL580 G7",
      "className": "PhysicalMachineProfile"
    }
  ],
  "value": "0",
  "projectionDays": [
    0
  ]
}
],
"timebasedTopologyChanges": {}
}

```

Alleviate Pressure

POST:

```

{
  "configChanges": {
    "addPolicyList": [],
    "automationSettingList": [],
    "removeConstraintList": [],
    "removePolicyList": [],
    "riSettingList": [],
    "osMigrationSettingList": [],
    "subscription": {}
  },
  "displayName": "Alleviate Pressure- Basic",
  "loadChanges": {
    "utilizationList": [],
    "maxUtilizationList": []
  },
  "projectionDays": [
    0
  ],
  "scope": [
    {
      "uuid": "11c63ebd77647e7b9c9fb85dd2d4c77464cbeac2",

```



```

        "displayName": "DC13\\DC13-Cluster",
        "className": "Cluster"
    },
    {
        "uuid": "57a4026a69ba4b46ebc430cb62d5c55eeee00695",
        "displayName": "DC13\\Physical Hosts_Cluster2 - Intel",
        "className": "Cluster"
    }
],
"topologyChanges": {
    "addList": [],
    "migrateList": [],
    "removeList": [],
    "replaceList": [],
    "relievePressureList": [
        {
            "projectionDay": 0,
            "sources": [
                {
                    "uuid": "11c63ebd77647e7b9c9fb85dd2d4c77464cbeac2",
                    "displayName": "DC13\\DC13-Cluster",
                    "className": "Cluster"
                }
            ],
            "destinations": [
                {
                    "uuid": "57a4026a69ba4b46ebc430cb62d5c55eeee00695",
                    "displayName": "DC13\\Physical Hosts_Cluster2 - Intel",
                    "className": "Cluster"
                }
            ]
        }
    ]
},
"type": "ALLEVIATE_PRESSURE"
}

```

Response:

```

{
    "uuid": "2531404249984",
    "displayName": "On-Prem Workload Migration 1",
    "owners": [
        {
            "uuid": "_4T_7kwY-Ed-WUKbEYSVIDw",
            "username": "administrator",
            "showSharedUserSC": false
        }
    ],
    "type": "WORKLOAD_MIGRATION",
    "scope": [
        {
            "uuid": "3e47ff3351f3247367c00c08fdc5bb974695c443",
            "displayName": "DC23-Datcenter\\DC23-cluster1",
            "className": "Cluster",
            "groupType": "PhysicalMachine",
            "isStatic": true,
            "logicalOperator": "AND"
        }
    ],
    "projectionDays": [
        0
    ],
    "topologyChanges": {

```

```

"addList": [
  {
    "projectionDays": [
      0
    ],
    "target": {
      "uuid": "67d24a6f265151876e87f39475fb4ee4b4170098",
      "displayName": "AvailabilitySet::ARSEN-AVS-NCUS",
      "className": "DiscoveredGroup"
    },
    "count": 1
  }
],
"loadChanges": {},
"configChanges": {},
"changes": [
  {
    "index": 1,
    "type": "SCOPE",
    "scope": [
      {
        "uuid": "3e47ff3351f3247367c00c08fdc5bb974695c443",
        "displayName": "DC23-Datacenter\\DC23-cluster1",
        "className": "Cluster",
        "entitiesCount": 3,
        "groupType": "PhysicalMachine",
        "severity": "Critical",
        "logicalOperator": "AND"
      }
    ]
  },
  {
    "index": 2,
    "type": "PROJECTION_PERIODS",
    "projectionDays": [
      0
    ]
  },
  {
    "index": 3,
    "type": "ADDED",
    "description": "1 AvailabilitySet::ARSEN-AVS-NCUS",
    "targets": [
      {
        "uuid": "67d24a6f265151876e87f39475fb4ee4b4170098",
        "displayName": "AvailabilitySet::ARSEN-AVS-NCUS",
        "className": "DiscoveredGroup",
        "entitiesCount": 3,
        "groupType": "VirtualMachine",
        "severity": "Critical",
        "logicalOperator": "AND"
      }
    ],
    "value": "1",
    "projectionDays": [
      0
    ]
  }
],
"timebasedTopologyChanges": {}
}

```

Optimize Current Environment

The result of a plan run with no custom configuration is an optimization of your current environment, respecting all current policies and constraints.

POST:

```
{
  "configChanges": {
    "addPolicyList": [],
    "automationSettingList": [],
    "removeConstraintList": [],
    "removePolicyList": [],
    "riSettingList": [],
    "osMigrationSettingList": [],
    "subscription": {}
  },
  "displayName": "Custom- No Config",
  "loadChanges": {
    "utilizationList": [],
    "maxUtilizationList": []
  },
  "projectionDays": [],
  "scope": [
    {
      "uuid": "Market",
      "displayName": "Global Environment",
      "className": "Market"
    }
  ],
  "topologyChanges": {
    "addList": [],
    "migrateList": [],
    "removeList": [],
    "replaceList": [],
    "relievePressureList": []
  },
  "type": "CUSTOM"
}
```

Response:

```
{
  "uuid": "2502119526800",
  "displayName": "Custom- No Config",
  "owners": [
    {
      "uuid": "_4T_7kwY-Ed-WUKbEYSVIDw",
      "username": "administrator",
      "showSharedUserSC": false
    }
  ],
  "type": "CUSTOM",
  "scope": [
    {
      "uuid": "_0x30YUg1Ed-gHc4L513yOA",
      "displayName": "Market",
      "className": "Market"
    }
  ],
  "changes": [
    {
      "index": 1,
      "type": "SCOPE",
      "scope": [
        {

```

```

    "uuid": "_0x3OYUglEd-gHc4L513yOA",
    "displayName": "Market",
    "className": "Market"
  }
]
}
]
}

```

Scenario Future Load Configuration Example

Future Load Plans

Future load plans are a type of plan in which commodities from active VMs are taken and applied to passive or low-workload VMs, simulating the effect on the environment if these passive VMs became active. For example, you may want to investigate the effect on your environment if your disaster recovery VMs were forced to run at historical peak values. In this case, the production VMs whose commodities will be used are the active VMs, and the currently idle disaster recovery VMs are the passive VMs.

Currently, there are two future load plan types:

- **PEAKOFPEAKS**

The peak-of-peaks future load plan replicates in the passive VMs every commodity of the active VMs reaching its historical peak utilization simultaneously, and the plan result will reflect the effect on your environment.

- **CUSTOM**

The custom future load plan replicates in the passive VMs every commodity of the active VMs reaching its current utilization simultaneously, and the plan result will reflect the effect on your environment.

The setup and configuration for both future load plans differ only in the content of the `type` parameter- all other steps will be identical.

The settings you make in a scenario correspond to the plan settings you can make in the user interface. These include:

- Plan scope
- Changes to workload (adding, removing, or replacing VMs or containers)
- Changes to supply (adding, removing, replacing PMs or storage)
- Enable/disable placement policies and other constraints
- Changes to action modes
- Enable/disable provisioning of supply
- Enable/disable resizing of workloads

Future Load Prerequisites

In order to run a future load plan, you must retrieve statistics for the entities to be included in the plan. Typically, this is done utilizing the `POST /markets/market_uuid/entities/stats` request, with `startDate` and `scopes` parameters.

Example input for statistic retrieval:

```

{
  "period": {
    "startDate": 1237056032
  },
  "scopes": [
    "4223ae0c-c99b-f6ca-c1ef-3f367bdf5528",
    "4223bb37-0090-f332-0140-cc3cce7b3735",
    "4223dc55-78f2-2cd7-9abf-b09b1be835b4",
  ]
}

```

```

"42231932-83af-10d9-f0cd-26c8a08a9e18" ,
"422374a3-2c64-b613-a9a7-1f900a2314b4"
]
}

```

Once the call is completed, copy the response in its entirety- or if using Swagger, click the Download button next to the response and copy the contents of the file.

Running the Future Load Plan

After creating the ScenarioApiDTO, the response will include the uuid of the created scenario. Use this uuid along with the uuid of the market to run the plan against (typically the real-time market) in the POST `/markets/market_uuid/scenarios/scenario_uuid` request.

Viewing the Peak of Peak Plan

After running the plan, the response will include the uuid of the created plan market, which you should note. Results can be viewed using the GET `/markets/market_uuid` request.

Schedules Endpoint

Workload Optimization Manager schedules specify a specific time range during which certain events can occur. Workload Optimization Manager currently uses schedules in scoped policies to set up windows of time when the policy can execute certain actions, or when the policy changes settings that affect analysis and action generation.

NOTE: When you configure a schedule window for a resize action, to ensure Workload Optimization Manager will execute the action during the scheduled time, you must turn off the Enforce Non Disruptive Mode setting for that scheduled policy. Even if you turn the setting off for the global policy, you still must turn the setting off for your scheduled policy. Otherwise Workload Optimization Manager will not execute the resize action.

Using the schedules endpoint, you can:

- Get a list of all schedules
- Get a specified schedule
- Create a new schedule
- Edit a schedule
- Delete a license
- View all policies using a specified schedule

Schedules Requests

Getting Schedules

Gets a list of schedules. For a list of schedules, the API returns an array of ScheduleApiDTOs. Each ScheduleApiDTO will contain details about the schedule, including the start and end time and date and recurrence. To get a single schedule, include the UUID of the notification in the request.

Examples:

- **All Schedules:** GET `https://10.10.10.10/api/v3/schedules`
- **Single Schedule:** GET `https://10.10.10.10/api/v3/schedules/284466929277824`

Response:

```
[
  {
    "uuid": "284466927892512",
    "displayName": "DalSched1",
    "startTime": "2020-02-29T16:30",
    "endTime": "2020-02-29T19:30",
    "recurrence": {
      "type": "WEEKLY",
      "daysOfWeek": [
        "Mon",
        "Fri"
      ],
      "interval": 1
    },
    "timeZone": "America/Denver",
    "nextOccurrence": "2020-03-02T16:30:00",
    "nextOccurrenceTimestamp": 1583191800000
  },
  {
    "uuid": "284466929277824",
    "displayName": "DalSched2",
    "startTime": "2020-02-29T16:30",
    "endTime": "2020-02-29T17:45",
    "recurrence": {
      "type": "MONTHLY",
      "daysOfMonth": [
        5
      ],
      "interval": 3
    },
    "timeZone": "America/Denver",
    "nextOccurrence": "2020-05-05T16:30:00",
    "nextOccurrenceTimestamp": 1588717800000
  }
]
```

Adding a Schedule

In order to create a schedule in Workload Optimization Manager, you must provide a valid ScheduleApiDTO.

Example: POST <https://10.10.10.10/api/v3/schedules>

Example input, showing a schedule to be run weekly on Friday between the hours of 0000 and 0400 that starts on 2019-12-20 and has no end date:

```
{
  "displayName": "DallasSched",
  "endTime": "2019-12-20T04:00",
  "startTime": "2019-12-20T00:00",
  "timeZone": "America/Denver",
  "recurrence": {
    "type": "WEEKLY",
    "interval": 1,
    "daysOfWeek": [
      "Fri"
    ]
  }
}
```

Getting Policies Using a Schedule

Given a schedule ID, retrieve any policies associated with that schedule.

Example: GET <https://10.10.10.10/api/v3/schedules/284466929277824/settingsPolicy>

Response: An array of SettingspolicyApiDTOs that represent the policies using the specified schedule.

```
[
  {
    "uuid": "284466929430656",
    "displayName": "DalStorage",
    "entityType": "Storage",
    "scopes": [
      {
        "uuid": "284460958528132",
        "displayName": "HawthorneHC_datastore",
        "isStatic": true,
        "logicalOperator": "AND"
      }
    ],
    "settingsManagers": [
      {
        "uuid": "automationmanager",
        "displayName": "Action Mode Settings",
        "category": "Automation",
        "settings": [
          {
            "uuid": "suspend",
            "displayName": "Suspend",
            "value": "MANUAL",
            "defaultValue": "MANUAL",
            "valueType": "STRING",
            "valueObjectType": "String",
            "options": [
              {
                "label": "Disabled",
                "value": "DISABLED"
              },
              {
                "label": "Recommend",
                "value": "RECOMMEND"
              },
              {
                "label": "Manual",
                "value": "MANUAL"
              },
              {
                "label": "Automatic",
                "value": "AUTOMATIC"
              }
            ]
          },
          {
            "entityType": "Storage"
          }
        ]
      }
    ]
  },
  {
    "schedule": {
      "uuid": "284466929277824",
      "displayName": "DalSched2",
      "startTime": "2020-02-29T16:30",
      "endTime": "2020-02-29T17:45",
      "recurrence": {
        "type": "MONTHLY",
```

```

    "daysOfMonth": [
      5
    ],
    "interval": 3
  },
  "timeZone": "America/Denver",
  "nextOccurrence": "2020-05-05T16:30:00",
  "nextOccurrenceTimestamp": 1588717800000
},
"disabled": false,
"readOnly": false,
"default": false
}
]

```

Schedules Endpoint Tips

When creating schedules, you can set multiple timing criteria. Below are schedules with examples of advanced timing. For basic schedules, see the [Schedules Endpoint \(on page 197\)](#).

Bi-Weekly Schedule with Specific Days

This schedule is set to run biweekly, indicated by the "type": "WEEKLY" and "interval": 2 fields. As indicated by the daysOfWeek array, this schedule is active on Monday, Wednesday, and Friday.

InputDTO:

```

{
  "displayName": "Schedule1",
  "endDate": "2020-07-10",
  "endTime": "2020-05-06T19:30",
  "startTime": "2020-05-06T15:30",
  "timeZone": "America/Denver",
  "recurrence": {
    "type": "WEEKLY",
    "interval": 2,
    "daysOfWeek": [
      "Mon",
      "Wed",
      "Fri"
    ]
  }
}

```

The API response for this schedule:

```

{
  "uuid": "284559431391120",
  "displayName": "DallasTest",
  "endDate": "2020-07-10",
  "startTime": "2020-05-06T15:30",
  "endTime": "2020-05-06T19:30",
  "recurrence": {
    "type": "WEEKLY",
    "daysOfWeek": [
      "Mon",
      "Wed",

```



```

    "Fri"
  ],
  "interval":2
},
"timeZone": "America/Denver",
"nextOccurrence": "2020-05-06T15:30:00",
"nextOccurrenceTimestamp": 1588800600000
}

```

Six-Month Schedule with Specific Week of the Month

This schedule is set to run every six months, indicated by the "type": "MONTHLY" and "interval": 6 fields. As indicated by the daysOfWeek array this schedule is active on Wednesday, and the "weekOfTheMonth": 2 indicates that this schedule will only run on the second week of the month.

This schedule was created on May 5th, 2020. Converting the timestamp in the API Response to a human-readable date, we see that the next run is on Wednesday, May 13, 2020 3:30:00 PM, the second Wednesday in May.

Input DTO:

```

{
  "displayName": "DallasTest2",
  "endDate": "2020-10-19",
  "endTime": "2020-05-06T19:15",
  "startTime": "2020-05-06T15:30",
  "timeZone": "America/Denver",
  "recurrence": {
    "type": "MONTHLY",
    "interval": 6,
    "daysOfWeek": [
      "Wed"
    ],
    "weekOfTheMonth": [
      2
    ]
  }
}

```

The API response for this schedule:

```

{
  "uuid": "284559434037456",
  "displayName": "DallasTest2",
  "endDate": "2020-10-19",
  "startTime": "2020-05-06T15:30",
  "endTime": "2020-05-06T19:15",
  "recurrence": {
    "type": "MONTHLY",
    "daysOfWeek": [
      "Wed"
    ],
    "weekOfTheMonth": [
      2
    ],
    "interval": 6
  },
  "timeZone": "America/Denver",
  "nextOccurrence": "2020-05-13T15:30:00",
  "nextOccurrenceTimestamp": 1589405400000
}

```

}

Getting Policies Attached to a Specific Schedule

In order to see what policies are using a schedule, use the `https://10.10.10.10/api/v3/schedules/{schedule_UUID}/settingsPolicy` request.

Response: An array of `SettingspolicyApiDTOs` that represent the policies using the specified schedule, whose details are also included.

```
[
  {
    "uuid": "284466929430656",
    "displayName": "DalStorage",
    "entityType": "Storage",
    "scopes": [
      {
        "uuid": "284460958528132",
        "displayName": "HawthorneHC_datastore",
        "isStatic": true,
        "logicalOperator": "AND"
      }
    ],
    "settingsManagers": [
      {
        "uuid": "automationmanager",
        "displayName": "Action Mode Settings",
        "category": "Automation",
        "settings": [
          {
            "uuid": "suspend",
            "displayName": "Suspend",
            "value": "MANUAL",
            "defaultValue": "MANUAL",
            "valueType": "STRING",
            "valueObjectType": "String",
            "options": [
              {
                "label": "Disabled",
                "value": "DISABLED"
              },
              {
                "label": "Recommend",
                "value": "RECOMMEND"
              },
              {
                "label": "Manual",
                "value": "MANUAL"
              },
              {
                "label": "Automatic",
                "value": "AUTOMATIC"
              }
            ],
            "entityType": "Storage"
          }
        ]
      }
    ]
  },
  {
    "schedule": {
      "uuid": "284466929277824",
      "displayName": "DalSched2",
```

```

    "startTime": "2020-02-29T16:30",
    "endTime": "2020-02-29T17:45",
    "recurrence": {
      "type": "MONTHLY",
      "daysOfMonth": [
        5
      ],
      "interval": 3
    },
    "timeZone": "America/Denver",
    "nextOccurrence": "2020-05-05T16:30:00",
    "nextOccurrenceTimestamp": 1588717800000
  },
  "disabled": false,
  "readOnly": false,
  "default": false
}
]

```

Search Endpoint

A search is a query performed on the entities that participate in the Workload Optimization Manager market. The most common use of search is to locate a particular object, service entity, or group of entities that share a characteristic.

Object and Entity refer to different items in your Workload Optimization Manager topology:

Using the search endpoint of the Workload Optimization Manager API, you can:

- Obtain criteria for use in detailed searching or building groups
- Get detailed information about any object in your Workload Optimization Manager environment

Search Utility Requests

Utility requests provide metadata that you can use to make related requests, assemble inputDTOs, or see the potential values of a particular DTO.

The search endpoint contains a utility request that shows the various criteria that you may use to search, for each entity type in the Workload Optimization Manager supply chain, and a second that shows the options for a specified criterion. You can then use this information to build your search criteria for more detailed groups.

The available filterTypes depend on the entity making up your search:

Entity	filterType Options
VirtualMachine	<ul style="list-style-type: none"> ▪ vmsByName ▪ vmsByPMName ▪ vmsByStorage ▪ vmsByNetwork ▪ vmsByApplication ▪ vmsByDatabaseServer ▪ vmsByDatabaseServerVersion ▪ vmsByDC ▪ vmsByVDC ▪ vmsByDCnested ▪ vmsByNumCPUs

Entity	filterType Options
	<ul style="list-style-type: none"> ▪ vmsByMem ▪ vmsByGuestName ▪ vmsByAltName ▪ vmsByClusterName ▪ vmsByDiskArrayName ▪ vmsByLogicalPoolName ▪ vmsByTag ▪ vmsByState ▪ vmsByBusinessAccountUuid ▪ vmsByResourceGroupUuid
VirtualDataCenter	<ul style="list-style-type: none"> ▪ vdcByVDCName ▪ vdcByVDCName ▪ vdcByTag ▪ vdcByState
PhysicalMachine	<ul style="list-style-type: none"> ▪ pmsByName ▪ pmsByStorage ▪ pmsByNetwork ▪ pmsBySwitch ▪ pmsByNumVms ▪ pmsByDC ▪ pmsByMem ▪ pmsByNumCPUs ▪ pmsByVendorName ▪ pmsByCPUModel ▪ pmsByModel ▪ pmsByTimezone ▪ pmsByClusterName ▪ pmsByTag ▪ pmsByState
Storage	<ul style="list-style-type: none"> ▪ storageByName ▪ storageByTag ▪ storageByVMs ▪ storageByDC ▪ storageByPMCluster ▪ storageByState ▪ volumeByDeletable
Application Component	<ul style="list-style-type: none"> ▪ appSrvsByName ▪ appsByName
WebServer	<ul style="list-style-type: none"> ▪ wbSrvsByName
BusinessApplication	<ul style="list-style-type: none"> ▪ busAppsByName
Database	<ul style="list-style-type: none"> ▪ databaseByName ▪ databaseByTag

Entity	filterType Options
	<ul style="list-style-type: none"> ▪ databaseByBusinessAccountUuid ▪ databaseByResourceGroupUuid
DatabaseServer	<ul style="list-style-type: none"> ▪ databaseServerByName ▪ databaseServerByTag ▪ databaseServerByBusinessAccountUuid ▪ databaseServerByEngine ▪ databaseServerByEdition ▪ databaseServerByVersion
VirtualApplication	<ul style="list-style-type: none"> ▪ vappsByName
Cluster	<ul style="list-style-type: none"> ▪ clustersByName ▪ clustersByTag
DataCenter	<ul style="list-style-type: none"> ▪ datacentersByName ▪ datacentersByTag
Group	<ul style="list-style-type: none"> ▪ groupsByName
StorageCluster	<ul style="list-style-type: none"> ▪ storageClustersByName
DiskArray	<ul style="list-style-type: none"> ▪ diskarrayByName
Zone	<ul style="list-style-type: none"> ▪ zonsByName
Region	<ul style="list-style-type: none"> ▪ regsByName
Network	<ul style="list-style-type: none"> ▪ netsByName
LoadBalancer	<ul style="list-style-type: none"> ▪ lbsByName
Chassis	<ul style="list-style-type: none"> ▪ chasByName
StorageController	<ul style="list-style-type: none"> ▪ storagecontrollerByName
DPod	<ul style="list-style-type: none"> ▪ dpodByName
VPod	<ul style="list-style-type: none"> ▪ vpodByName
LogicalPool	<ul style="list-style-type: none"> ▪ logicalPoolByName
Switch	<ul style="list-style-type: none"> ▪ switchByName
Container	<ul style="list-style-type: none"> ▪ containersByName ▪ containersByPodName ▪ containersByVMName

Entity	filterType Options
	<ul style="list-style-type: none"> ▪ containersByNamespace ▪ containerSpecsByName
ContainerPod	<ul style="list-style-type: none"> ▪ containerPodsByName ▪ containerPodsByNamespace ▪ containerPodsByVMName
ServiceEntity	<p>NOTE: Groups of type <code>ServiceEntity</code> are the only groups that have multiple entity types, and are used exclusively for cloud targets.</p> <ul style="list-style-type: none"> ▪ workloadByBusinessAccountUuid ▪ workloadByResourceGroupUuid
Workload	<ul style="list-style-type: none"> ▪ workloadByBusinessAccountUuid ▪ workloadByResourceGroupUuid ▪ workloadControllersByName ▪ workloadControllersByNamespace ▪ workloadControllersByKind ▪ ResourceGroup ▪ resourceGroupByName ▪ resourceGroupByUuid ▪ resourceGroupByBusinessAccountUuid
BusinessAccount	<ul style="list-style-type: none"> ▪ businessAccountByName ▪ businessAccountByUuid ▪ subBusinessAccountOfUuid ▪ businessAccountValidationStatus ▪ businessAccountTargetName ▪ businessAccountCloudProvider
BillingFamily	<ul style="list-style-type: none"> ▪ billingFamilyByName
ViewPod	<ul style="list-style-type: none"> ▪ viewPodByName
DesktopPool	<ul style="list-style-type: none"> ▪ desktopPoolByName ▪ desktopPoolByViewPod
BusinessUser	<ul style="list-style-type: none"> ▪ businessUserByDesktopPool ▪ businessUserByName ▪ businessUserByViewPod
Cloud-Specific Filters	<ul style="list-style-type: none"> ▪ computeTiersByName ▪ computeTiersByMem ▪ databaseTiersByName ▪ databaseTiersByDBMem ▪ databaseServerTiersByName ▪ databaseServerTiersByVMem

Example: GET <https://10.10.10.10/api/v3/search/criteria>

Response: An array of filter criteria, separated by entity type. For example, this is the filter criteria for Virtual Machine entities:

```

"VirtualMachine": {
  "criteria": [
    {
      "inputType": "*",
      "elements": "displayName",
      "filterCategory": "property",
      "filterType": "vmsByName"
    },
    {
      "inputType": "*",
      "elements": "HostedBy:displayName",
      "filterCategory": "entity",
      "filterType": "vmsByPMName"
    },
    {
      "inputType": "*",
      "elements": "LayeredOver:Storage:displayName",
      "filterCategory": "entity",
      "filterType": "vmsByStorage"
    },
    {
      "inputType": "*",
      "elements": "LayeredOver:Network:displayName",
      "filterCategory": "entity",
      "filterType": "vmsByNetwork"
    },
    {
      "inputType": "*",
      "elements": "Hosts:Application:displayName",
      "filterCategory": "entity",
      "filterType": "vmsByApplication"
    },
    {
      "inputType": "*",
      "elements": "HostedBy:PhysicalMachine:HostedBy:DataCenter:displayName",
      "filterCategory": "entity",
      "filterType": "vmsByDC"
    },
    {
      "inputType": "*",
      "elements": "LayeredOver:VirtualDataCenter:displayName",
      "filterCategory": "entity",
      "filterType": "vmsByVDC"
    },
    {
      "inputType": "*",
      "elements": "AllMemberOf:VirtualDataCenter:displayName",
      "filterCategory": "entity",
      "filterType": "vmsByDCnested"
    },
    {
      "inputType": "#",
      "elements": "ExtendedBy:VMTopoExt:numCpus",
      "filterCategory": "property",
      "filterType": "vmsByNumCPUs"
    },
    {
      "inputType": "#",
      "elements": "Commodities:VMem:capacity",
      "filterCategory": "property",
      "filterType": "vmsByMem"
    }
  ]
}

```

```

    "inputType": "*",
    "elements": "ExtendedBy:VMTopoExt:guestName",
    "filterCategory": "property",
    "filterType": "vmsByGuestName"
  },
  {
    "inputType": "*",
    "elements": "ExtendedBy:VMTopoExt:altName",
    "filterCategory": "property",
    "filterType": "vmsByAltName"
  },
  {
    "inputType": "*",
    "elements": "HostedBy:PhysicalMachine:MemberOf:Cluster:displayName",
    "filterCategory": "entity",
    "filterType": "vmsByClusterName"
  },
  {
    "inputType": "*",
    "elements": "LayeredOver:Storage:LayeredOver:DiskArray:displayName",
    "filterCategory": "entity",
    "filterType": "vmsByDiskArrayName"
  },
  {
    "inputType": "*",
    "elements": "LayeredOver:Storage:LayeredOver:LogicalPool:displayName",
    "filterCategory": "entity",
    "filterType": "vmsByLogicalPoolName"
  },
  {
    "inputType": "*",
    "elements": "tags",
    "filterCategory": "property",
    "filterType": "vmsByTag"
  },
  {
    "inputType": "*",
    "elements": "state",
    "filterCategory": "property",
    "filterType": "vmsByState"
  },
  {
    "inputType": "*",
    "elements": "belongsTo:uuid",
    "filterCategory": "entity",
    "filterType": "vmsByBusinessAccountUuid"
  },
  {
    "inputType": "*",
    "elements": "MemberOf:ResourceGroup:uuid",
    "filterCategory": "entity",
    "filterType": "vmsByResourceGroupUuid"
  }
]
}

```

Getting the Options for a Criterion

For a specific search criterion and entity type, you can get the possible values. For example, you may want to retrieve all tags for a particular group of hosts, or see the available state options for a particular group of virtual machines. This request takes the following parameters:

criteria_key	The criterion to retrieve options for. Currently, Workload Optimization Manager accepts the following criteria keys: [state, tags]. Any other input that returns results should be considered internal or early access, and should not be relied on for scripting purposes.
scopes	The UUID of the scope to retrieve the criterion values for. For example, to retrieve all tags for virtual machines in a particular cluster, put the cluster UUID here.
entity_type	The entity whose state or tag options will be returned. For example, if scopes is passed with the UUID of a cluster, and this parameter is passed with a value of VirtualMachine, the request will return the options for each virtual machine in that cluster.
order_by	The field to order the results by. [creation_date, name, risk_category, savings, severity].
ascending	Default: true. When false, results will be in descending order.
environment_type	Returns only objects in the specified environment type. [Cloud, Hybrid, On-prem]

Example: GET `https://10.10.10.10/api/v3/search/criteria/state/options?scopes=7c8d50fae46c09b68b00916411469770304226b4&entity_type=VirtualMachine`

Response: A `CriteriaOptionApiDTO` with the available options. For example, the response below indicates that all virtual machines on the cluster whose UUID was passed are either in active or idle states.

```
[
  {
    "value": "ACTIVE"
  },
  {
    "value": "IDLE"
  }
]
```

Search Requests

Getting Object Information by UUID

Gets information about any object in your Workload Optimization Manager environment.

`Object` and `Entity` refer to different items in your Workload Optimization Manager topology:

NOTE:

For searches, the API paginates the returned data. If you do not specify a pagination limit, then the API returns pages set to the default limit of 100. You can set a maximum of 500 for the pagination limit. If you make no settings, and your search results include more than 100 entries, the results will be paginated. Your scripts should always check for a pagination cursor when processing search results.

You can change the default and max settings in the Workload Optimization Manager `cr.yaml` file. Find the entries for:

- `apiPaginationDefaultLimit`
- `apiPaginationMaxLimit`

If you set the `objectType` parameter has a value of `Group`, the response will include objects related to an entity that perform grouping. For example, resource groups and clusters both perform grouping, and will be included in the response.

To further refine your search, include a value for the `group_type` parameter. This parameter describes the membership of the group you are searching for. For example, a search with an `objectType` of `Group` and `group_type` of `VirtualMachine` will return all groups of virtual machines in the current scope.

Example: `https://10.10.10.10/api/v3/search/Market`

Response: A DTO with information about the retrieved object. In this example, the retrieved item is the real-time Market:

```
{
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/markets/_0x30YUg1Ed-gHc4L513yOA"
    }
  ],
  "uuid": "_0x30YUg1Ed-gHc4L513yOA",
  "displayName": "Market",
  "className": "Market",
  "state": "RUNNING",
  "unplacedEntities": false,
  "environmentType": "HYBRID"
}
```

NOTE:

When making this request, you can use the `groupBy` parameter to order the results. The `/search` endpoint does not support the `utilization` value for the `groupBy` parameter. When this value is used, the API will return the results ordered by `displayName`.

Settings Endpoint

The settings endpoint can be used to change settings in a variety of settings managers. For example, using the `actionscripmanager`, you can change action script settings, and using the `automationmanager`, you can change automation settings on your instance.

Using the settings endpoint of the Workload Optimization Manager API, you can:

- Get a list of available setting managers and settings
- Edit a setting

List of Settings Managers

The settings managers available to be modified are:

- `actionscripmanager`
Contains settings related to the use of action scripts.
- `automationmanager`
Contains settings related to action modes for entities in your environment.
- `cloudsavingsmanager`
Contains settings related to execution retention for cloud entities.
- `clusterHeadroomConfig`
Contains settings related to the headroom plans generated by the system.
- `controlmanager`
Contains settings related to workflows that replace native action handling for generated actions in your environment.
- `emailmanager`
Contains settings related to SMTP email notifications.
- `hcisettingsmanager`
Contains settings related to managing hyperconverged infrastructure.
- `marketsettingsmanager`
Contains settings related to market analysis.
- `osmigrationmanager`
Contains settings related to operating system migration for cloud entities.
- `persistencemanager`
Contains settings related to statistic retention data and reporting.
- `reservedinstancemanager`
Contains settings related to reserved instances.
- `storagesettingsmanager`
Contains settings related to storage entity statistics and analysis.
- `telemetrymanager`
Contains settings related to telemetry opt-in and terms of service.
-

For more information about each settingsmanager, execute the GET `https://10.10.10.10/api/v3/settings` request.

Settings Utility Requests

Utility requests provide metadata that you can use to make related requests, assemble inputDTOs, or see the potential values of a particular DTO.

The settings endpoint contains a utility request that shows each settings manager, and the settings available.

Example: GET `https://10.10.10.10/api/v3/settings/`

Response: An array of `SettingsManagerApiDTOs`, where each object is a settings manager and contains the settings for that manager.

Settings Requests

Getting Current Settings for a Specified Settings Manager

Gets the current settings for the specified settings manager. This request is often used to see the settings of a particular settings manager before updating.

Example: GET `https://10.10.10.10/api/v3/settings/automationmanager`

Response: A list of `SettingApiDTO`s representing the settings for the specified settings manager:

```
[
  {
    "uuid": "startVM",
    "displayName": "Start",
    "value": "RECOMMEND",
    "defaultValue": "RECOMMEND",
    "valueType": "STRING",
    "options": [
      {
        "label": "Disabled",
        "value": "DISABLED"
      },
      {
        "label": "Recommend",
        "value": "RECOMMEND"
      },
      {
        "label": "Manual",
        "value": "MANUAL"
      },
      {
        "label": "Automated",
        "value": "AUTOMATIC"
      }
    ],
    "entityType": "VirtualMachine",
    "sourceGroupName": "Global"
  },
  {
    "uuid": "startPM",
    "displayName": "Start",
    "value": "RECOMMEND",
    "defaultValue": "RECOMMEND",
    "valueType": "STRING",
    "options": [
      {
        "label": "Disabled",
        "value": "DISABLED"
      },
      {
        "label": "Recommend",
        "value": "RECOMMEND"
      },
      {
        "label": "Manual",
        "value": "MANUAL"
      },
      {
        "label": "Automated",
        "value": "AUTOMATIC"
      }
    ]
  }
]
```

```

"entityType": "PhysicalMachine",
"sourceGroupName": "Global"
},
{
"uuid": "startDS",
"displayName": "Start",
"value": "RECOMMEND",
"defaultValue": "RECOMMEND",
"valueType": "STRING",
"options": [
{
"label": "Disabled",
"value": "DISABLED"
},
{
"label": "Recommend",
"value": "RECOMMEND"
},
{
"label": "Manual",
"value": "MANUAL"
},
{
"label": "Automated",
"value": "AUTOMATIC"
}
],
"entityType": "Storage",
"sourceGroupName": "Global"
},
...
]
    
```

Editing Settings

To edit a Setting, pass the new value in the body of this request. This request takes the following parameters:

settingsManager_uuid	The UUID of the settingsmanager whose setting will be changed.
setting_uuid	The setting whose value will be changed.

Example: PUT <https://10.10.10.10/api/v3/settings/automationmanager/moveVM>

Example Input: A SettingApiDTO. In this case, the value is being changed from MANUAL to RECOMMEND:

```

{
"uuid": "moveVM",
"displayName": "Move",
"value": "RECOMMEND",
"defaultValue": "MANUAL",
"valueType": "STRING",
"options": [
{
"label": "Disabled",
"value": "DISABLED"
},
{
"label": "Recommend",
"value": "RECOMMEND"
}
],
}
    
```

```

    "label": "Manual",
    "value": "MANUAL"
  },
  {
    "label": "Automated",
    "value": "AUTOMATIC"
  }
],
"entityType": "VirtualMachine",
"sourceGroupName": "Global"
}

```

Response: The SettingApiDTO reflecting your changes:

```

{
  "uuid": "moveVM",
  "displayName": "Move",
  "value": "RECOMMEND",
  "defaultValue": "MANUAL",
  "valueType": "STRING",
  "options": [
    {
      "label": "Disabled",
      "value": "DISABLED"
    },
    {
      "label": "Recommend",
      "value": "RECOMMEND"
    },
    {
      "label": "Manual",
      "value": "MANUAL"
    },
    {
      "label": "Automated",
      "value": "AUTOMATIC"
    }
  ],
  "entityType": "VirtualMachine",
  "sourceGroupName": "Global"
}

```

Settings Policies Endpoint

A Settings Policy is the collection of settings that apply to an entity. In Workload Optimization Manager, there is a default policy for each type of entity. These global defaults are the base settings for entities, and any settings policies that you create will specify deltas to the defaults. Note that you can edit the global policies.

When you create a custom settings policy, you assign a scope to it – one or more groups of entities you want to affect with the policy. For these policies, you specify just the settings that will be different from the defaults.

In addition to global default policies and custom policies, Workload Optimization Manager also discovers groups that need special settings, and creates policies for those groups. For example, when Workload Optimization Manager discovers Azure Availability Sets and AWS Autoscaling Groups, it generates settings policies for those groups that turn on Consistent Resizing for the group.

Using the settings policies endpoint, you can:

- Get a listing of the settings policies in your environment
- Get details for a single settings policy
- Create settings policies
- Edit settings policies
- Delete settings policies

Settings Policies Requests

Getting Settings Policies

This call returns an array of SettingsPolicyApiDTOs for all the settings policies in your environment. You can pass entity types to limit the listing to policies for those types, and you can limit the list to only default policies.

This request takes the following parameters:

only_defaults	If this is true, the call only gets the default settings policies
entity_type	One or more entity types to limit the list of settings policies

Examples:

- Get all the settings policies: GET <https://10.10.10.10/api/v3/settingspolicies>
- Get all the default settings policies: GET https://10.10.10.10/api/v3/settingspolicies?only_defaults=true
- Get settings policies for VMs and Hosts: GET https://10.10.10.10/api/v3/settingspolicies?entity_type=VirtualMachine&entity_type=PhysicalMachine
- Get a single settings policy (pass the policy Uuid): GET https://10.10.10.10/api/v3/settingspolicies/_aVDEwGegEemDFcIzuV5wcQ

Response: An array of SettingsPolicyApiDTOs. This listing shows the settings policies for Container entities.

```
[
  {
    "uuid": "_vyMHEDnSEemHXrxYkw9y2Q",
    "displayName": "Container defaults",
    "entityType": "Container",
    "settingsManagers": [
      {
        "uuid": "marketsettingsmanager",
        "displayName": "Operational Constraints",
        "category": "Analysis",
        "settings": [
          {
            "uuid": "usedIncrement_Container_VMEM",
            "displayName": "Increment constant for Container VMem [MB]",
            "value": "64.0",
            "defaultValue": "64.0",
            "categories": [
              "resizeRecommendationsConstants"
            ],
            "valueType": "NUMERIC",
            "min": 0,
            "max": 10000000,
            "entityType": "Container",
            "sourceGroupName": "Global"
          }
        ]
      }
    ]
  }
]
```

```

    },
    {
      "uuid": "usedIncrement_Container_VCPU",
      "displayName": "Increment constant for Container VCPU [MHz]",
      "value": "100.0",
      "defaultValue": "100.0",
      "categories": [
        "resizeRecommendationsConstants"
      ],
      "valueType": "NUMERIC",
      "min": 0,
      "max": 1000000,
      "entityType": "Container",
      "sourceGroupName": "Global"
    },
    {
      "uuid": "enforceConsistentResizingContainer",
      "displayName": "Consistent Resizing",
      "value": "false",
      "defaultValue": "false",
      "categories": [
        "resizeRecommendationsConstants"
      ],
      "valueType": "BOOLEAN",
      "entityType": "Container",
      "sourceGroupName": "Global"
    },
    {
      "uuid": "resizeTargetUtilization_Container",
      "displayName": "Resize Target Utilization",
      "value": "0.0",
      "defaultValue": "0.0",
      "valueType": "NUMERIC",
      "min": 0,
      "max": 100,
      "entityType": "Container",
      "sourceGroupName": "Global"
    }
  ]
},
...
}
]

```

Creating a Settings Policy

Referenced Endpoint: [Groups \(on page 87\)](#)

To create a settings policy, you must do the following:

- Specify a policy name,
- Specify whether to enable or disable the policy in your market.
- Set the policy scope – Specify one or more groups of a given entity type. This determines the entity type for the policy.
- For the of settings you want to make, specify the appropriate settings manager, and then specify an array of setting/ value pairs.
- Optionally, specify a schedule window and/or action execution schedule for the policy.

To set the policy scope, you provide an array of objects that contain group Uuids. These objects are effectively abbreviated GroupApiDTOs. Note that the groups must all be for the same type of entity. This specifies the entity type for the settings policy. Use the Groups endpoint to get the Uuid values for the groups you want in the scope. For example, to set the scope to a single group of VMs, use the following scopes object:


```
"scopes": [
  {
    "uuid": "_lSlr0GddEemDFcIzuV5wcQ"
  }
]
```

To specify the actual settings, you provide an array of `SettingsManagerApiDTOs`. Each one contains an array of settings that you want to make. To see all the settings for a given entity type, refer to the user interface. The setting managers you can choose from are:

- `actionscriptmanager`
Contains settings related to the use of action scripts.
- `automationmanager`
Contains settings related to action modes for entities in your environment.
- `cloudsavingsmanager`
Contains settings related to execution retention for cloud entities.
- `clusterHeadroomConfig`
Contains settings related to the headroom plans generated by the system.
- `controlmanager`
Contains settings related to workflows that replace native action handling for generated actions in your environment.
- `emailmanager`
Contains settings related to SMTP email notifications.
- `hcisettingsmanager`
Contains settings related to managing hyperconverged infrastructure.
- `marketsettingsmanager`
Contains settings related to market analysis.
- `osmigrationmanager`
Contains settings related to operating system migration for cloud entities.
- `persistence manager`
Contains settings related to statistic retention data and reporting.
- `reservedinstancemanager`
Contains settings related to reserved instances.
- `storage settingsmanager`
Contains settings related to storage entity statistics and analysis.
- `telemetrymanager`
Contains settings related to telemetry opt-in and terms of service.
-

For example, to set the VM start action to AUTOMATED and to set the VCPU maximum to 16, use the following `settingsManagers` array:

```
"settingsManagers": [
  {
    "uuid": "automationmanager",
    "settings": [
      {
        "uuid": "startVM",
        "value": "AUTOMATIC"
      }
    ]
  }
]
```

```

    ]
  },
  {
    "uuid": "marketsettingsmanager",
    "settings": [
      {
        "uuid": "resizeVcpuMaximum_VM",
        "value": 16
      }
    ]
  }
]

```

You can set up a schedule window that determines when the settings policy takes effect. For that you provide a `ScheduleApiDTO` for the schedule details. It includes: the start and end dates, start and end times,

- Start and end dates.
- Start and end times.
- An optional `RecurrenceApiDTO` for schedule recurrence. If you don't provide this you will specify a one-time schedule window.

For example, use this to specify a "perpetual" schedule window (does not expire until 2099) that starts at 12:30 am and ends at 7:30 am every Saturday and Sunday.

```

"schedule": {
  "startDate": "2019-04-28T00:30:00-04:00",
  "endDate": "2099-12-31T07:30:00-05:00",
  "startTime": "2019-04-28T00:30:00-04:00",
  "endTime": "2019-04-28T07:30:00-04:00",
  "recurrence": {
    "type": "WEEKLY",
    "daysOfWeek": [
      "Sat",
      "Sun"
    ]
  }
}

```

An example complete data payload for a policy with a policy-level schedule, action execution instruction, and action execution schedule is as follows:

```

{
  "disabled": false,
  "entityType": "VirtualMachine",
  "displayName": "TestPol",
  "scopes": [
    {
      "uuid": "285041619454560"
    }
  ],
  "settingsManagers": [
    {
      "uuid": "automationmanager",
      "displayName": "Action Mode Settings",
      "category": "Automation",
      "settings": [
        {
          "uuid": "storageMove",
          "value": "RECOMMEND",
          "valueType": "STRING",
          "valueObjectType": "String",
          "defaultValue": "RECOMMEND",

```

```

        "entityType": "VirtualMachine",
        "displayName": "Storage Move",
        "options": [
            {
                "label": "Disabled",
                "value": "DISABLED"
            },
            {
                "label": "Recommend",
                "value": "RECOMMEND"
            },
            {
                "label": "External Approval",
                "value": "EXTERNAL_APPROVAL"
            },
            {
                "label": "Manual",
                "value": "MANUAL"
            },
            {
                "label": "Automatic",
                "value": "AUTOMATIC"
            }
        ]
    },
    {
        "uuid": "storageMoveExecutionSchedule",
        "value": "285088800975856",
        "valueType": "LIST",
        "valueObjectType": "String",
        "entityType": "VirtualMachine",
        "displayName": "Execution window for Storage Move action"
    }
]
},
{
    "schedule": {
        "uuid": "285088797821136",
        "displayName": "TestSched",
        "endTime": "2021-05-24T16:00",
        "startTime": "2021-05-24T14:30",
        "timeZone": "America/Chicago",
        "recurrence": {
            "type": "MONTHLY",
            "interval": 1,
            "daysOfMonth": [
                1
            ]
        }
    }
}
}
}

```

Example: Using the above payload, POST <https://10.10.10.10/api/v3/settingspolicies>

Response: The settings policy that you created. Use this response to get the policy Uuid.

Editing a Settings Policy

To edit a settings policy, you push a new set of data to the Settings Policies end point. The best way to do this is to copy the SettingsPolicyApiDTO that you want to edit, make changes to that DTO, and then push the DTO out to the API. To remove the policy from the scope, pass the SettingsPolicyApiDTO, and also pass `reset_defaults=true` as a parameter.

This request takes the following parameters:

settingsPolicy_Uuid	The Uuid of the policy you want to edit
reset_defaults	A boolean you can use to reset the policy to default. When <code>reset_defaults=true</code> , you remove the policy and reset that scope to default. When you use this setting, pass an empty object <code>{ }</code> as the data payload.

Examples:

- Assuming you copied a `SettingsPolicyApiDTO` and then made some changes to it, and pass that at the payload:
PUSH `https://10.10.10.10/api/v3/settingspolicies/_2-CbQGONEemyOoIvFZyv1A?reset_defaults=false`
- Assuming you want to remove the policy (and so you pass an empty object as the payload): **PUSH**
`https://10.10.10.10/api/v3/settingspolicies/_2-CbQGONEemyOoIvFZyv1A?reset_defaults=true`

Response: The modified `SettingsPolicyApiDTO`.

Deleting a Settings Policy

Deletes the given settings policy.

Example: **DELETE** `https://10.10.10.10/api/v3/settingspolicies/_aV5ucGoTEemyOoIvFZyv1A`

Response: 200 for success.

Statistics Endpoint

Statistics Overview

Statistics are pieces of information that Workload Optimization Manager discovers while continuously analyzing your environment. The most common use of statistics is to look at a particular statistic over a specific time frame.

Using the stats endpoint of the Workload Optimization Manager API, you can:

- Get a list of stats requests in other endpoints
- Get a filtered list of statistics over a specific time frame
- Get a list of statistics for a specified entity
- Get a filtered list of statistics for a specified entity

Statistic Timings

Statistics associated to headroom and capacity planning are written to the Workload Optimization Manager database daily, with a timestamp of midnight. Other statistics are collected and stored in the database in ten-minute increments. When retrieving groups of statistics that include both headroom and actively-monitored information, the timestamps returned will reflect the last-written date for each statistic.

Statistics Utility Requests

Utility requests provide metadata that you can use to make related requests, assemble inputDTOs, or see the potential values of a particular DTO.

The stats endpoint contains a utility request that shows common entry points for statistic-related requests. These can be used to obtain statistics for particular entities or groups.

Example: **GET** `https://10.10.10.10/api/v3/stats`

Response: An array of Link objects, where each object contains a URL to get all statistics for a specified UUID, entity, or group.

Statistics Requests

Getting Statistics for an Entity

Gets all statistics for the specified entity. This request takes the following parameters:

entity_uuid	The entity whose statistics will be returned.
q	Used internally by Workload Optimization Manager.

NOTE:

When you retrieve statistics for a cluster, using the `/groups` endpoint will return the aggregated statistics for all applicable cluster entities. For individual stats per entity, use the `/stats` endpoint.

Some statistics are only valid for certain scopes. When you request given statistics for a scope that doesn't include them, the API does not return any data. For example, the `numVMs` statistic is valid in only the Market and Cluster scopes – the API omits `numVMs` data from the response when you query other scopes.

Example: `https://10.10.10.10/api/v3/stats/423f26a7-1132-df1c-64e2-8a040480b046`

Response: A list of `StatSnapshotApiDTOs` representing the current values of the statistics.

```
[
  {
    "displayName": "AdityaReplica",
    "date": "2019-04-24T20:09:46-04:00",
    "statistics": [
      {
        "name": "priceIndex",
        "relatedEntityType": "VirtualMachine",
        "values": {
          "max": 1.01,
          "min": 1.01,
          "avg": 1.01,
          "total": 1.01
        },
        "value": 1.01
      },
      {
        "displayName": "CPUProvisioned/AdityaReplica",
        "name": "CPUProvisioned",
        "capacity": {
          "max": 3120000,
          "min": 3120000,
          "avg": 3120000,
          "total": 3120000
        },
        "relatedEntityType": "VirtualMachine",
        "filters": [
          {
            "type": "relation",
            "value": "bought"
          }
        ],
        "units": "MHz",
        "values": {
```

```
    "max": 5200,
    "min": 5200,
    "avg": 5200,
    "total": 5200
  },
  "value": 5200
},
{
  "displayName": "Swapping/AdityaReplica",
  "name": "Swapping",
  "capacity": {
    "max": 40000000,
    "min": 40000000,
    "avg": 40000000,
    "total": 40000000
  },
  "relatedEntityType": "VirtualMachine",
  "filters": [
    {
      "type": "relation",
      "value": "bought"
    }
  ],
  "units": "bit/sec",
  "values": {
    "max": 0,
    "min": 0,
    "avg": 0,
    "total": 0
  },
  "value": 0
},
{
  "displayName": "NumDisk/AdityaReplica",
  "name": "NumDisk",
  "capacity": {
    "max": 2147483650,
    "min": 2147483650,
    "avg": 2147483650,
    "total": 2147483650
  },
  "relatedEntityType": "VirtualMachine",
  "filters": [
    {
      "type": "relation",
      "value": "bought"
    }
  ],
  "values": {
    "max": 1,
    "min": 1,
    "avg": 1,
    "total": 1
  },
  "value": 1
},
...
]
}
```

Getting a Filtered List of Statistics

Gets a list of statistics filtered by a `StatPeriodApiInputDTO` that you create. For more information about the criteria that make up the input for this request, see the Swagger documentation for this request, located at https://<Your_Workload_Optimization_Manager_IP>/swagger/external/index.html.

Example: POST <https://10.10.10.10/api/v3/stats/423f26a7-1132-df1c-64e2-8a040480b046>

Example Input: This input will return the values for the VMem, VCPU, and VStorage statistics of the specified entity, ordered first by key, then relatedEntity, then virtualDisk.

```
{
  "statistics": [
    {
      "name": "VMem",
      "groupBy": [
        "key",
        "relatedEntity",
        "virtualDisk"
      ]
    },
    {
      "name": "VCPU",
      "groupBy": [
        "key",
        "relatedEntity",
        "virtualDisk"
      ]
    },
    {
      "name": "VStorage",
      "groupBy": [
        "key",
        "relatedEntity",
        "virtualDisk"
      ]
    }
  ]
}
```

Response: A list of `StatSnapshotApiDTOs` representing the filtered statistics for the entity:

```
[
  {
    "displayName": "AdityaReplica",
    "date": "2019-04-24T20:28:06-04:00",
    "statistics": [
      {
        "displayName": "AdityaReplica",
        "name": "VMem",
        "capacity": {
          "max": 1048576,
          "min": 1048576,
          "avg": 1048576,
          "total": 1048576
        },
        "relatedEntityType": "VirtualMachine",
        "filters": [
          {
            "type": "virtualDisk",
            "value": ""
          }
        ]
      }
    ]
  }
]
```

```

        "type": "key",
        "value": null
    },
    {
        "type": "relation",
        "value": "sold"
    }
],
"relatedEntity": {
    "uuid": "5d2f7b69eb3bf506089feba37d31b0c376b02e34",
    "displayName": "GuestLoad[AdityaReplica]",
    "className": "Application"
},
"units": "KB",
"values": {
    "max": 0,
    "min": 0,
    "avg": 0,
    "total": 0
},
"value": 0
},
{
    "displayName": "AdityaReplica",
    "name": "VCPU",
    "capacity": {
        "max": 5200,
        "min": 5200,
        "avg": 5200,
        "total": 5200
    },
    "relatedEntityType": "VirtualMachine",
    "filters": [
        {
            "type": "virtualDisk",
            "value": ""
        },
        {
            "type": "key",
            "value": null
        },
        {
            "type": "relation",
            "value": "sold"
        }
    ]
},
"relatedEntity": {
    "uuid": "5d2f7b69eb3bf506089feba37d31b0c376b02e34",
    "displayName": "GuestLoad[AdityaReplica]",
    "className": "Application"
},
"units": "MHz",
"values": {
    "max": 19,
    "min": 14.93,
    "avg": 14.93,
    "total": 14.93
},
"value": 14.93
}
]
}
]

```


Getting a Filtered List of Statistics for All Objects In a Specified Scope

For the specified scope, gets a filtered list of statistics for each entity. If you do not provide any statistics in the input, the response contains basic information about each entity. For more information about the criteria that make up the input for this request, see the Swagger documentation for this request, located at https://<Your_Workload_Optimization_Manager_IP>/swagger/external/index.html.

Example: POST <https://10.10.10.10/api/v3/stats?ascending=true>

Example Input: This input will return the VMem values for each entity in the real-time market from a period of five days prior to the request, to one day prior to the request.

```
{
  "scopes": [
    "Market"
  ],
  "period": {
    "startDate": "-5d",
    "endDate": "-1d",
    "statistics": [
      {
        "name": "VMem"
      }
    ]
  },
  "relatedType": "VirtualMachine"
}
```

Response: A list of StatSnapshotApiDTOs representing the filtered statistics for the entities in the specified scope:

```
[
  {
    "uuid": "4200829c-1272-c0a4-2d17-55f2cc0ef1b4",
    "displayName": "vm-c67a1cdd-609e-4282-809c-e0def5cd0d7a",
    "className": "VirtualMachine",
    "environmentType": "ONPREM",
    "stats": [
      {
        "displayName": "vm-c67a1cdd-609e-4282-809c-e0def5cd0d7a",
        "date": "2019-04-19T00:00:00-04:00",
        "statistics": [
          {
            "name": "VMem",
            "capacity": {
              "max": 16777216,
              "min": 16777216,
              "avg": 16777216,
              "total": 33554432
            }
          },
          {
            "relatedEntityType": "VirtualMachine",
            "filters": [
              {
                "type": "relation",
                "value": "sold"
              }
            ]
          }
        ],
        "units": "KB",
        "values": {
          "max": 1509949.5,
          "min": 335544.3,
          "avg": 587202.56,
          "total": 1174405.1
        }
      }
    ]
  }
]
```

```

        "value": 587202.56
      }
    ]
  },
  {
    "displayName": "vm-c67a1cdd-609e-4282-809c-e0def5cd0d7a",
    "date": "2019-04-20T00:00:00-04:00",
    "statistics": [
      {
        "name": "VMem",
        "capacity": {
          "max": 16777216,
          "min": 16777216,
          "avg": 16777216,
          "total": 33554432
        },
        "relatedEntityType": "VirtualMachine",
        "filters": [
          {
            "type": "relation",
            "value": "sold"
          }
        ],
        "units": "KB",
        "values": {
          "max": 1509949.5,
          "min": 369098.75,
          "avg": 587202.56,
          "total": 1174405.1
        },
        "value": 587202.56
      }
    ]
  },
  {
    "displayName": "vm-c67a1cdd-609e-4282-809c-e0def5cd0d7a",
    "date": "2019-04-22T00:00:00-04:00",
    "statistics": [
      {
        "name": "VMem",
        "capacity": {
          "max": 16777216,
          "min": 16777216,
          "avg": 16777216,
          "total": 33554432
        },
        "relatedEntityType": "VirtualMachine",
        "filters": [
          {
            "type": "relation",
            "value": "sold"
          }
        ],
        "units": "KB",
        "values": {
          "max": 12582912,
          "min": 0,
          "avg": 452984.84,
          "total": 905969.7
        },
        "value": 452984.84
      }
    ]
  },
  {

```

```

        "displayName": "vm-c67a1cdd-609e-4282-809c-e0def5cd0d7a",
        "date": "2019-04-23T00:00:00-04:00",
        "statistics": [
          {
            "name": "VMem",
            "capacity": {
              "max": 16777216,
              "min": 16777216,
              "avg": 16777216,
              "total": 33554432
            },
            "relatedEntityType": "VirtualMachine",
            "filters": [
              {
                "type": "relation",
                "value": "sold"
              }
            ],
            "units": "KB",
            "values": {
              "max": 838860.8,
              "min": 0,
              "avg": 167772.16,
              "total": 335544.3
            },
            "value": 167772.16
          }
        ]
      },
    ],
    {
      "uuid": "39EBB726-41D9-4BC8-A41D-CA301854309C",
      "displayName": "Gilad_OM-38071_SMB_VM2",
      "className": "VirtualMachine",
      "environmentType": "ONPREM"
    },
    {
      "uuid": "97A3F420-B7AD-414D-A543-FD308AC774A6",
      "displayName": "Gilad_VMM_Test_VM_2",
      "className": "VirtualMachine",
      "environmentType": "ONPREM"
    },
    {
      "uuid": "4211f183-69a8-3676-3e53-0151365500ff",
      "displayName": "james-ubuntu-dc13",
      "className": "VirtualMachine",
      "environmentType": "ONPREM",
      "stats": [
        {
          "displayName": "james-ubuntu-dc13",
          "date": "2019-04-19T00:00:00-04:00",
          "statistics": [
            {
              "name": "VMem",
              "capacity": {
                "max": 1048576,
                "min": 1048576,
                "avg": 1048576,
                "total": 2097152
              },
              "relatedEntityType": "VirtualMachine",
              "filters": [
                {
                  "type": "relation",
                }
              ]
            }
          ]
        }
      ]
    }
  ]
}

```



```

        "max": 73400.32,
        "min": 11534.34,
        "avg": 17825.79,
        "total": 35651.59
    },
    "value": 17825.79
}
]
},
{
    "displayName": "james-ubuntu-dc13",
    "date": "2019-04-22T00:00:00-04:00",
    "statistics": [
        {
            "name": "VMem",
            "capacity": {
                "max": 1048576,
                "min": 1048576,
                "avg": 1048576,
                "total": 2097152
            },
            "relatedEntityType": "VirtualMachine",
            "filters": [
                {
                    "type": "relation",
                    "value": "sold"
                }
            ],
            "units": "KB",
            "values": {
                "max": 83886.08,
                "min": 8388.61,
                "avg": 19922.94,
                "total": 39845.89
            },
            "value": 19922.94
        }
    ]
},
{
    "displayName": "james-ubuntu-dc13",
    "date": "2019-04-23T00:00:00-04:00",
    "statistics": [
        {
            "name": "VMem",
            "capacity": {
                "max": 1048576,
                "min": 1048576,
                "avg": 1048576,
                "total": 2097152
            },
            "relatedEntityType": "VirtualMachine",
            "filters": [
                {
                    "type": "relation",
                    "value": "sold"
                }
            ],
            "units": "KB",
            "values": {
                "max": 73400.32,
                "min": 3145.73,
                "avg": 18874.37,
                "total": 37748.73
            },
            "value": 18874.37
        }
    ]
}
]
}

```

```

        "value": 18874.37
      }
    ]
  }
},
{
  "uuid": "421d2165-36cd-7f6a-3a43-08e09f6f4e0f",
  "displayName": "ACM-LexCorp-Control",
  "className": "VirtualMachine",
  "environmentType": "ONPREM",
  "stats": [
    {
      "displayName": "ACM-LexCorp-Control",
      "date": "2019-04-19T00:00:00-04:00",
      "statistics": [
        {
          "name": "VMem",
          "capacity": {
            "max": 2097152,
            "min": 2097152,
            "avg": 2097152,
            "total": 4194304
          },
          "relatedEntityType": "VirtualMachine",
          "filters": [
            {
              "type": "relation",
              "value": "sold"
            }
          ],
          "units": "KB",
          "values": {
            "max": 167772.16,
            "min": 18874.37,
            "avg": 37748.73,
            "total": 75497.47
          },
          "value": 37748.73
        }
      ]
    },
    {
      "displayName": "ACM-LexCorp-Control",
      "date": "2019-04-20T00:00:00-04:00",
      "statistics": [
        {
          "name": "VMem",
          "capacity": {
            "max": 2097152,
            "min": 2097152,
            "avg": 2097152,
            "total": 4194304
          },
          "relatedEntityType": "VirtualMachine",
          "filters": [
            {
              "type": "relation",
              "value": "sold"
            }
          ],
          "units": "KB",
          "values": {
            "max": 125829.12,
            "min": 18874.37,

```

```

        "avg": 37748.73,
        "total": 75497.47
    },
    "value": 37748.73
}
]
},
{
  "displayName": "ACM-LexCorp-Control",
  "date": "2019-04-21T00:00:00-04:00",
  "statistics": [
    {
      "name": "VMem",
      "capacity": {
        "max": 2097152,
        "min": 2097152,
        "avg": 2097152,
        "total": 4194304
      },
      "relatedEntityType": "VirtualMachine",
      "filters": [
        {
          "type": "relation",
          "value": "sold"
        }
      ],
      "units": "KB",
      "values": {
        "max": 104857.6,
        "min": 20971.52,
        "avg": 35651.59,
        "total": 71303.17
      },
      "value": 35651.59
    }
  ]
},
{
  "displayName": "ACM-LexCorp-Control",
  "date": "2019-04-22T00:00:00-04:00",
  "statistics": [
    {
      "name": "VMem",
      "capacity": {
        "max": 2097152,
        "min": 2097152,
        "avg": 2097152,
        "total": 4194304
      },
      "relatedEntityType": "VirtualMachine",
      "filters": [
        {
          "type": "relation",
          "value": "sold"
        }
      ],
      "units": "KB",
      "values": {
        "max": 272629.75,
        "min": 20971.52,
        "avg": 73400.32,
        "total": 146800.64
      },
      "value": 73400.32
    }
  ]
}

```

```

    ]
  },
  {
    "displayName": "ACM-LexCorp-Control",
    "date": "2019-04-23T00:00:00-04:00",
    "statistics": [
      {
        "name": "VMem",
        "capacity": {
          "max": 2097152,
          "min": 2097152,
          "avg": 2097152,
          "total": 4194304
        },
        "relatedEntityType": "VirtualMachine",
        "filters": [
          {
            "type": "relation",
            "value": "sold"
          }
        ],
        "units": "KB",
        "values": {
          "max": 251658.23,
          "min": 23068.67,
          "avg": 79691.77,
          "total": 159383.55
        },
        "value": 79691.77
      }
    ]
  }
]
},
{
  "uuid": "420f3462-ca50-fedf-aa8f-223bd39b1852",
  "displayName": "shai-redhat",
  "className": "VirtualMachine",
  "environmentType": "ONPREM",
  "stats": [
    {
      "displayName": "shai-redhat",
      "date": "2019-04-19T00:00:00-04:00",
      "statistics": [
        {
          "name": "VMem",
          "capacity": {
            "max": 1048576,
            "min": 1048576,
            "avg": 1048576,
            "total": 2097152
          },
          "relatedEntityType": "VirtualMachine",
          "filters": [
            {
              "type": "relation",
              "value": "sold"
            }
          ],
          "units": "KB",
          "values": {
            "max": 20971.52,
            "min": 0,
            "avg": 1048.58,
            "total": 2097.15
          }
        }
      ]
    }
  ]
}

```



```

        },
        "value": 1048.58
    }
  ]
},
...
]
}
]

```

Complex Statistic Queries

Using the `POST /stats` request, you can retrieve a variety of statistics. For example, this is a complex query made by the Workload Optimization Manager UI:

```

{
  "statistics": [
    {
      "name": "CPU",
      "relatedEntityType": "PhysicalMachine",
      "groupBy": [
        "key",
        "virtualDisk"
      ],
      "filters": [
        {
          "type": "relation",
          "value": "sold"
        }
      ]
    },
    {
      "name": "Mem",
      "relatedEntityType": "PhysicalMachine",
      "groupBy": [
        "key",
        "virtualDisk"
      ],
      "filters": [
        {
          "type": "relation",
          "value": "sold"
        }
      ]
    },
    {
      "name": "NetThroughput",
      "relatedEntityType": "PhysicalMachine",
      "groupBy": [
        "key",
        "virtualDisk"
      ],
      "filters": [
        {
          "type": "relation",
          "value": "sold"
        }
      ]
    },
    {
      "name": "IOThroughput",
      "relatedEntityType": "PhysicalMachine",
      "groupBy": [

```

```
    "key",
    "virtualDisk"
  ],
  "filters":[
    {
      "type":"relation",
      "value":"sold"
    }
  ]
},
{
  "name":"Q1VCPU",
  "relatedEntityType":"PhysicalMachine",
  "groupBy":[
    "key",
    "virtualDisk"
  ],
  "filters":[
    {
      "type":"relation",
      "value":"sold"
    }
  ]
},
{
  "name":"Q2VCPU",
  "relatedEntityType":"PhysicalMachine",
  "groupBy":[
    "key",
    "virtualDisk"
  ],
  "filters":[
    {
      "type":"relation",
      "value":"sold"
    }
  ]
},
{
  "name":"Q4VCPU",
  "relatedEntityType":"PhysicalMachine",
  "groupBy":[
    "key",
    "virtualDisk"
  ],
  "filters":[
    {
      "type":"relation",
      "value":"sold"
    }
  ]
},
{
  "name":"Q8VCPU",
  "relatedEntityType":"PhysicalMachine",
  "groupBy":[
    "key",
    "virtualDisk"
  ],
  "filters":[
    {
      "type":"relation",
      "value":"sold"
    }
  ]
}
```

```

    },
    {
      "name": "Q16VCPU",
      "relatedEntityType": "PhysicalMachine",
      "groupBy": [
        "key",
        "virtualDisk"
      ],
      "filters": [
        {
          "type": "relation",
          "value": "sold"
        }
      ]
    }
  ],
  {
    "name": "Q32VCPU",
    "relatedEntityType": "PhysicalMachine",
    "groupBy": [
      "key",
      "virtualDisk"
    ],
    "filters": [
      {
        "type": "relation",
        "value": "sold"
      }
    ]
  }
],
{
  "name": "Ballooning",
  "relatedEntityType": "PhysicalMachine",
  "groupBy": [
    "key",
    "virtualDisk"
  ],
  "filters": [
    {
      "type": "relation",
      "value": "sold"
    }
  ]
},
{
  "name": "Swapping",
  "relatedEntityType": "PhysicalMachine",
  "groupBy": [
    "key",
    "virtualDisk"
  ],
  "filters": [
    {
      "type": "relation",
      "value": "sold"
    }
  ]
},
{
  "name": "CPUProvisioned",
  "relatedEntityType": "PhysicalMachine",
  "groupBy": [
    "key",
    "virtualDisk"
  ],
  "filters": [

```

```

    {
      "type": "relation",
      "value": "sold"
    }
  ]
},
{
  "name": "MemProvisioned",
  "relatedEntityType": "PhysicalMachine",
  "groupBy": [
    "key",
    "virtualDisk"
  ],
  "filters": [
    {
      "type": "relation",
      "value": "sold"
    }
  ]
},
{
  "name": "Flow",
  "relatedEntityType": "PhysicalMachine",
  "groupBy": [
    "key",
    "virtualDisk"
  ],
  "filters": [
    {
      "type": "relation",
      "value": "sold"
    }
  ]
},
{
  "name": "FlowAllocation",
  "relatedEntityType": "PhysicalMachine",
  "groupBy": [
    "key",
    "virtualDisk"
  ],
  "filters": [
    {
      "type": "relation",
      "value": "sold"
    }
  ]
},
{
  "name": "Cooling",
  "relatedEntityType": "PhysicalMachine",
  "groupBy": [
    "key",
    "virtualDisk"
  ],
  "filters": [
    {
      "type": "relation",
      "value": "sold"
    }
  ]
},
{
  "name": "Power",
  "relatedEntityType": "PhysicalMachine",

```

```

    "groupBy": [
      "key",
      "virtualDisk"
    ],
    "filters": [
      {
        "type": "relation",
        "value": "sold"
      }
    ]
  },
  {
    "name": "Space",
    "relatedEntityType": "PhysicalMachine",
    "groupBy": [
      "key",
      "virtualDisk"
    ],
    "filters": [
      {
        "type": "relation",
        "value": "sold"
      }
    ]
  }
]
}

```

The previous request is made in context of a datacenter scope, so the response includes information for each host within that datacenter. The `virtualDisk` value for the `groupBy` parameter ensures that all virtual disks appear in the response as individual line items, rather than an aggregation.

Additionally, the `"filters": [{"type": "relation", "value": "sold"}]` found throughout the call indicates that the response includes those commodities *sold* by these hosts, rather than purchased from a lower level in the supply chain.

Supplychains Endpoint

Workload Optimization Manager models your environment as a market of buyers and sellers. It discovers different types of entities in your environment via the targets you have configured for your installation. Discovery maps these entities to the supply chain so Workload Optimization Manager can monitor them and manage the workloads they support. For example, for a hypervisor target Workload Optimization Manager discovers VMs, the hosts and datastores that provide resources to the VMs, and the applications that use VM resources. The entities in your environment form a chain of supply and demand where some entities provide resources while others consume the supplied resources.

Using the `supplychains` endpoint, you can:

- Get a full or filtered supply chain related to an entity in your environment
- Get the statistics for the supply chain related to an entity in your environment

Supplychains Requests

Getting a Supply Chain for the Specified Entity

Gets the full supply chain for the specified entity. For example, if the UUID of a virtual machine is used, you will see the applications that are hosted by that virtual machine, the hosts and datastores that it consumes from, the cluster or datacenter that the hosts consume from, the disk arrays and storage controllers that the datastores consume from, and so on.

In a supply chain, depth refers to the distance in the supply chain from the entity called. For example, if the UUID of a host is used, virtual machines consuming from that host will have a depth of -1 , applications consuming from those virtual machines will have a depth of -2 , other hosts that are in the supply chain will have a depth of 0 , and the cluster of the host will have a depth of 1 .

Example: GET https://10.10.10.10/api/v3/supplychains?uuids=Virtual_ESX_4238042f-7465-e92a-5c28-a7a929307247&health=false

Response: A `SupplychainApiDTO` representing the supply chain of the specified entity- in this case, a host. Note that when there is a single instance of an entity, Workload Optimization Manager will return the details of that entity. In the response, you can see this with the `DPod` and `Storage Controller` entities.

```
{
  "seMap": {
    "Application": {
      "depth": -2,
      "entitiesCount": 12,
      "stateSummary": {
        "ACTIVE": 5,
        "SUSPEND": 1,
        "IDLE": 6
      }
    },
    "DPod": {
      "depth": -1,
      "entitiesCount": 1,
      "stateSummary": {
        "ACTIVE": 1
      }
    },
    "instances": {
      "c15cef94af07fccf19e303884592a4ef211764f1": {
        "links": [
          {
            "rel": "self",
          }
        ]
      }
    }
  },
  "href": "https://10.10.10.10/api/v3/entities/c15cef94af07fccf19e303884592a4ef211764f1?include_aspects=false"
},
{
  "uuid": "c15cef94af07fccf19e303884592a4ef211764f1",
  "displayName": "DPOD-data-mycorp",
  "className": "DPod",
  "priceIndex": 1e-12,
  "state": "ACTIVE",
  "severity": "Normal",
  "environmentType": "ONPREM"
},
...
"StorageController": {
  "depth": 3,
  "entitiesCount": 1,
  "stateSummary": {
    "ACTIVE": 1
  }
}
```



```
{
  "uuid": "74626820648480",
  "displayName": "Service-app/mediation-hyperv",
  "className": "Service"
}
```

Now assume you want to use a VM group as the seeded scope, and you want to exclude any Service entities or higher in the Supply Chain:

Example: GET <https://10.10.168.102/api/v3/supplychains/leafEntities?uuids=74626820647952&filterEntityTypes=Service>

```
[
  {
    "uuid": "74699295824896",
    "displayName": "App-app/cost-67b7b9bb4d-bl8kt/cost",
    "className": "Application Component"
  },
  {
    "uuid": "74699295824908",
    "displayName": "App-app/mediation-vmx-6cd7f4ff-nzqp6/mediation-vmx",
    "className": "Application Component"
  },
  {
    "uuid": "74699295824897",
    "displayName": "App-app/mediation-azurebilling-c585c846f-mvn17/mediation-azurebilling",
    "className": "Application Component"
  },
  ...
]
```

Getting Statistics for a Supply Chain

Gets a list of statistics filtered by a user-created SupplyChainStatsApiInputDTO. For more information about the criteria that make up the input for this request, see the Swagger documentation for this request, located at https://<Your_Workload_Optimization_Manager_IP>/swagger/external/index.html.

Example: POST <https://10.10.168.102/api/v3/supplychains/stats>

Example Input: This input will return the number of applications running on the specified UUID (in this case, a Datacenter):

```
{
  "uuids": [
    "e27e5c2f85d91107ac3f26fd63d4478e808f590b"
  ],
  "types": [
    "Application"
  ],
  "environmentType": "ONPREM"
}
```

Response: A list of StatSnapshotApiDTOs representing the filtered statistics for the entity:

```
[
  {
    "date": "2019-05-01T17:45:42-04:00",
    "statistics": [
      {
        "name": "entities",
        "filters": [],

```



```

    "value": 25
  }
]

```

Tags Endpoint

Tags Overview

Tags are metadata attached to resources that you can use to organize your environment. Tags are most often used to delineate resource groupings for technical, automation, business, or security purposes.

Workload Optimization Manager discovers tags for AWS, Azure, and vCenter resources.

Using the tags endpoint, you can:

- Get a list of available tags
- Get the members belonging to a specified tag

Additionally, you can use the tags-related requests in the `entities` endpoint to:

- Assign a tag to an entity
- Delete all tags or a single tag associated to an entity

Tags Requests

Pagination for Tags Requests

When you request tag data, the API uses pagination to return subsets of the data. You should always use pagination when available to make sure you get your data in manageable chunks. To paginate returned data, the `limit`, `orderBy`, and `cursor` parameters control how the APIs paginate their data. If you do not specify a `limit` for the following requests, the API will paginate the data to a default limit of records:

- `GET /tags`
- `GET /tags/<tagKey>/entities`

If your scripts make these requests without setting a limit, you should be sure they check for a pagination cursor in the returned data.

For general information about pagination, see [Pagination in the Workload Optimization Manager API \(on page 18\)](#).

Getting Tags

For a list of tags, the API returns a list of TagApiDTOs. Each TagApiDTO will contain the key/value pair of the tag. The key can be used to see the entities belonging to the tag.

Example: `https://10.10.10.10/api/v3/tags`

Response:

```

[
  {
    "key": "owner",
    "values": [
      "QA_Azure"
    ]
  }
]

```

```

},
{
  "key": "director",
  "values": [
    "p-bosh",
    "bosh-init"
  ]
},
...
]
    
```

Filtering Tags by Scope, Entity, and Environment

Gets a filtered list of tags for the specified scope, entity type, and/or environment. For example, you can use this to find tags only in a particular cluster, tags that affect at least one VM, and/or limit your result to only cloud entities. This request accepts the following parameters:

scopes	A list of UUIDs representing the scope of the request. For example, providing Market as a scope will search the entire real-time market. If you provide the UUID of a host, only entities on that host would be in the response.
entity_type	<ul style="list-style-type: none"> ▪ APPLICATION ▪ APPLICATION_SERVER ▪ BUSINESS_ACCOUNT ▪ BUSINESS_UNIT ▪ CHASSIS ▪ CLOUD_SERVICE ▪ CONTAINER ▪ CONTAINER_POD ▪ DATABASE ▪ DATABASE_SERVER ▪ DATACENTER ▪ DISK_ARRAY ▪ DPOD ▪ IO_MODULE ▪ LOAD_BALANCER ▪ LOGICAL_POOL ▪ NETWORK ▪ PHYSICAL_MACHINE ▪ STORAGE ▪ STORAGE_CONTROLLER ▪ SWITCH ▪ VIRTUAL_APPLICATION ▪ VIRTUAL_DATACENTER ▪ VIRTUAL_MACHINE ▪ VPOD
environment_type	Returns only tags from entities in the specified environment type. [Cloud, Hybrid, Onprem]

Example: GET `https://10.10.10.10/api/v3/tags?scopes=Market&entity_type=VirtualMachine&environment_type=ONPREM`

Response: a list of VMs running on-premises in the real-time market with tags.

Getting Entities For A Specified Tag

Referenced Endpoint: [Entities \(on page 59\)](#)

Gets a list of entities that have the specified tag. An entity is any device in your environment that Workload Optimization Manager manages, such as applications, physical machines, VMs, storage, and datacenters.. You can use this information to see where entities with the specified tag are located, what other tags are associated to those entities, and detailed information about each entity.

Example: GET `https://10.10.10.10/api/v3/tags/owner/entities`

Response: A list of entities that have the tag owner:

```
[
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/entities/azure::VM::375ddfb4-3127-44eb-9088-3c7645212f81?include_aspects=false"
      }
    ],
    "uuid": "azure::VM::375ddfb4-3127-44eb-9088-3c7645212f81",
    "displayName": "oleg-westus2-unmanaged-std",
    "className": "VirtualMachine",
    "priceIndex": 3.2109845,
    "state": "ACTIVE",
    "severity": "Normal",
    "costPrice": 0.024,
    "discoveredBy": {
      "uuid": "_GLpj4JwIEei_xJ5Ai6-rnQ",
      "displayName": "mycorp.management.core.windows.net",
      "type": "Azure"
    },
    "remoteId": "azure::VM::375ddfb4-3127-44eb-9088-3c7645212f81",
    "template": {
      "uuid": "azure::VMPROFILE::Basic_A0",
      "displayName": "Basic_A0",
      "discovered": false
    },
    "environmentType": "CLOUD",
    "tags": {
      "owner": [
        "PT_Azure"
      ],
      "AutoSuspend": [
        "false"
      ]
    }
  },
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/entities/azure::VM::c94e96bf-975e-47da-8c52-7ac90161cc87?include_aspects=false"
      }
    ],
  },
]
```

```

"uuid": "azure::VM::c94e96bf-975e-47da-8c52-7ac90161cc87",
"displayName": "oleg-westus2-managed-avail-set-1",
"className": "VirtualMachine",
"priceIndex": 2.446491,
"state": "ACTIVE",
"severity": "Normal",
"costPrice": 0.018,
"discoveredBy": {
  "uuid": "_GLpj4JwIEei_xJ5Ai6-rnQ",
  "displayName": "mycorp.management.core.windows.net",
  "type": "Azure"
},
"remoteId": "azure::VM::c94e96bf-975e-47da-8c52-7ac90161cc87",
"template": {
  "uuid": "azure::VMPROFILE::Standard_B1s",
  "displayName": "Standard_B1s",
  "discovered": false
},
"environmentType": "CLOUD",
"tags": {
  "owner": [
    "PT_Azure"
  ],
  "AutoSuspend": [
    "false"
  ]
}
}
]

```

Targets Endpoint

A target is a service that performs management functions in your virtual environment. Workload Optimization Manager uses targets to monitor workload and to execute actions in your environment.

To discover entities in your environment, you add different targets to your Workload Optimization Manager installation. Workload Optimization Manager then uses these targets to collect data from your environment.

Workload Optimization Manager uses probes to connect to targets and discover their entities. The Workload Optimization Manager GUI provides forms for users to specify different target instances. Note that each probe may require different settings, and it's possible that different versions of Workload Optimization Manager supports different sets of probes.

For complete target information, review "Target Configuration" in the *Target Configuration Guide*. You should not modify targets without a full understanding of how they interact with Workload Optimization Manager.

Using the targets endpoint of the Workload Optimization Manager API, you can:

- Get a single target or list of targets present in your environment
- Get a list of probes available in your Workload Optimization Manager installation
- Get the actions or statistics for a target
- Get the workflows discovered by a target
- Add or edit a target
- Trigger validation or rediscovery on a target
- Delete a target

Targets Utility Requests

Utility requests provide metadata that you can use to make related requests, assemble inputDTOs, or see the potential values of a particular DTO.

The targets endpoint contains a utility request called `specs` that shows the information required for probe registry for each target available to Workload Optimization Manager, including required input fields and expected target type and category values.

NOTE:

For a list of probes available to your specific Workload Optimization Manager installation, review your organization's licensing agreement.

Example: GET `https://10.10.10.10/api/v3/targets/specs`

Response: An array of `TargetApiDTO` objects, where each object contains an array of input fields. This example shows one entry for the JVM probe in the Application Server category.

```
[
  {
    [
      ...
      {
        "category": "Application Server",
        "identifyingFields": [
          "nameOrAddress"
        ],
        "inputFields": [
          {
            "displayName": "Scope/Address",
            "name": "nameOrAddress",
            "isMandatory": true,
            "isSecret": false,
            "valueType": "GROUP_SCOPE",
            "description": "The group of VMs or the address of the JVM server"
          },
          {
            "displayName": "Port Number",
            "name": "targetPort",
            "defaultValue": "1099",
            "isMandatory": true,
            "isSecret": false,
            "valueType": "NUMERIC",
            "description": "The JMX port that connects with the JVM server"
          },
          {
            "displayName": "Username",
            "name": "username",
            "isMandatory": true,
            "isSecret": false,
            "valueType": "STRING",
            "description": "The JVM server JMX password, enter a space if the server has no security"
          },
          {
            "displayName": "Password",
            "name": "password",
            "isMandatory": true,
            "isSecret": true,
            "valueType": "STRING",
            "description": "The JVM server JMX port, enter a space if the server has no security"
          }
        ]
      }
    ]
  }
]
```

```

    ],
    "type": "JVM"
  },
  ...
}
]

```

Targets Requests

Target requests handle creation, configuration, validation, rediscovery, and deletion of targets on your Workload Optimization Manager appliance.

Pagination for Targets Requests

When you request target entities, the API uses pagination to return subsets of the data. You should always use pagination when available to make sure you get your data in manageable chunks. To paginate returned data, the `limit`, `orderBy`, and `cursor` parameters control how the APIs paginate their data.

If you do not specify a `limit` for the `GET /targets/<targetId>/entities` request, the API will paginate the data to a default limit of records. If your script makes this request without setting a limit, you should be sure it checks for a pagination cursor in the returned data.

For general information about pagination, see [Pagination in the Workload Optimization Manager API \(on page 18\)](#).

Getting Targets

For a list of targets, the API returns an array of `TargetApiDTO` objects. Each `TargetApiDTO` object will contain the validation status, target type and category, and input field names and values. To get a single target, include the UUID of the target in the request.

This request takes the following parameters:

<code>environment_type</code>	Returns only targets in the specified environment type. [Cloud, Hybrid, On-prem]
-------------------------------	--

Examples:

- All Targets: `GET https://10.10.10.10/api/v3/targets`
- Single Target: `GET https://10.10.10.10/api/v3/targets/___xwWYAE33eku7PbzHdETIA`

Response: A single entry in an array of targets. Notice that the password field is secret, so the response does not contain the password value.

```

[
  {
    "uuid": "___xwWYAE33eku7PbzHdETIA",
    "category": "Hypervisor",
    "type": "vCenter",
    "status": "Validated",
    "lastValidated": "2018-06-26T14:25:08-04:00",
    "inputFields": [
      {
        "displayName": "Address",
        "name": "address",
        "value": "vsphere-demo.mycorp.com",
        "isMandatory": true,
        "isSecret": false,
        "valueType": "STRING",

```

```

    "description": "IP or address of vCenter Server",
    "verificationRegex": ".*"
  },
  {
    "displayName": "Username",
    "name": "username",
    "value": "corp\\my.user",
    "isMandatory": true,
    "isSecret": false,
    "valueType": "STRING",
    "description": "User name to use to connect to a target",
    "verificationRegex": ".*"
  },
  {
    "displayName": "Password",
    "name": "password",
    "isMandatory": true,
    "isSecret": true,
    "valueType": "STRING",
    "description": "Password to use to connect to a target",
    "verificationRegex": ".*"
  }
]

```

Adding a Target

Adds a target to your Workload Optimization Manager installation. You must pass a completed TargetApiDTO object as an inputDTO. For more information about the required fields of the TargetApiDTO for the target you want to add, execute the /targets/specs utility request.

Example: POST https://10.10.10.10/api/v3/targets

Example inputDTO:

```

{
  "category": "Hypervisor",
  "inputFields": [
    {
      "name": "username",
      "value": "corp\\my.name"
    },
    {
      "name": "password",
      "value": "Octopath"
    },
    {
      "name": "nameOrAddress",
      "value": "10.10.10.10"
    }
  ],
  "type": "vCenter"
}

```

Rediscover or Validate All Targets

Manually triggers a full rediscovery or validation of all targets in your environment. This is often done to immediately see multiple changes that would normally not be reflected until a daily full discovery is performed, such as displaying updated Orchestrator workflows.

This call takes the following parameters:

validate	When true, validates all targets in your environment
rediscover	When true, performs a full rediscovery on all targets in your environment

Examples:

- Rediscovery:
POST <https://10.10.10.10/api/v3/targets?validate=true>
- Validation:
POST <https://10.10.10.10/api/v3/targets?rediscover=true>

Rediscover or Validate A Single Target

Manually triggers a full rediscovery or validation of a single target in your environment. This is often done to immediately see a change that would normally not be reflected until a daily full discovery is performed, such as displaying updated Orchestrator workflows.

This call takes the following parameters:

validate	When true, validates the specified target
rediscover	When true, performs a full rediscovery on the specified target

Examples:

- Rediscovery: https://10.10.10.10/api/v3/targets/__xwWYAE33eku7PbzHdETIA?rediscover=true
- Validation: https://10.10.10.10/api/v3/targets/__xwWYAE33eku7PbzHdETIA?validate=true

Response: The TargetApiDTO object of the specified target:

```
{
  "uuid": "__xwWYAE3EeiNKPbzHdETIA",
  "category": "Hypervisor",
  "inputFields": [
    ...
  ],
  "lastValidated": "2018-06-27T21:45:56-04:00",
  "status": "Validated",
  "type": "vCenter"
}
```

Editing Target Input Fields

Edits the input fields of an existing target, and accepts the modified TargetApiDTO as input.

NOTE: You can GET the target first using the GET `/targets/specs` to see the fields required for that target. Note that you must pass all input fields in the modified TargetApiDTO object.

Example: PUT https://10.10.10.10/api/v3/targets/_HgZQ4CdCEeaUWYEyo3vsw

Example input, editing the username for a single target:

```
[
  {
    "uuid": "_HgZQ4CdCEeaUWYEyo3vsw",
```



```

"category": "Hypervisor",
"type": "vCenter",
"status": "Validated",
"lastValidated": 1474575346109,
"inputFields": [
  {
    "displayName": "Address",
    "name": "address",
    "value": "vsphere.mycorp.com",
    "isMandatory": true,
    "isSecret": false,
    "valueType": "STRING"
  },
  {
    "displayName": "Username",
    "name": "username",
    "value": "corp\\my.name.changed",
    "isMandatory": true,
    "isSecret": false,
    "valueType": "STRING"
  },
  {
    "displayName": "Password",
    "name": "password",
    "value": "Octopath",
    "isMandatory": true,
    "isSecret": true
  }
]
}
]

```

Deleting a Target

Deletes the specified target and removes all entities managed by that target. This will also remove any pending actions related to the deleted target.

Example: DELETE https://10.10.10.10/api/v3/targets/__xwWYAE3EeiNKPbzHdETIA

Response: A successful deletion request returns a Response Code of 200.

Actions For a Specified Target

Referenced Endpoint: [Actions \(on page 29\)](#)

These requests get full or filtered lists of actions per target for use in reports, or to find a particular action.

NOTE: Once you have the action UUID, you can use requests from the actions endpoint to post changes to that action.

Getting an Unfiltered Array of Actions

Gets a list of current actions in your environment associated to entities discovered by the specified target.

Example: GET https://10.10.10.10/api/v3/targets/__xwWYAE3EeiNKPbzHdETIA/actions

Getting a Filtered Array of Actions

Gets a filtered list of actions discovered by a single target. Pass an inputDTO containing one or more of the following criteria:

Criteria	Description
actionModelList	<ul style="list-style-type: none"> ▪ DISABLED: Do not recommend or perform the action. When you disable an action, the user interface will no longer display actions of that type. ▪ RECOMMENDED: Recommend the action so a user can execute it via the given hypervisor or by other external means ▪ MANUAL: Recommend the action, and provide the option to execute that action through the Workload Optimization Manager user interface or an /actions API request. ▪ AUTOMATED: You have directed Workload Optimization Manager to execute the action automatically. ▪ COLLECTION (UNUSED): Legacy action mode, no longer used.
actionStateList	<ul style="list-style-type: none"> ▪ DISABLED: An action whose policy has been disabled. ▪ RECOMMEND: An action that cannot be automated due to policy settings or must be executed outside the system, such as the purchase of hardware. ▪ PENDING_ACCEPT: When the action mode is set to manual, a recommended action that has not been accepted or cleared. ▪ ACCEPTED: An action that has been accepted, but is not yet in progress. ▪ IN_PROGRESS: An action that is being executed. ▪ SUCCEEDED: An action that was accepted and completed successfully. ▪ FAILED: An action that was accepted and did not complete successfully. ▪ REJECTED: When the action mode is set to manual, an action that has been rejected by the user. ▪ CLEARED: When the action mode is set to manual, an action that is no longer recommended by the market. ▪ ACCOUNTING: For cloud entities, an action to resize in order to use a different instance template.

Criteria	Description
	<ul style="list-style-type: none"> ▪ QUEUED: When more than 10 actions are to be executed for a single target, Workload Optimization Manager will place the 11th and all subsequent actions into a QUEUED state, and they will execute as the previous actions complete.
actionTypeList	<ul style="list-style-type: none"> ▪ START: Start an entity, and add it to the Workload Optimization Manager market. ▪ MOVE: Move an entity from one provider to another. For example, moving a VM between hosts, or a datastore between disk arrays. ▪ SUSPEND: Suspend the entity to exclude its capacity from your environment. Suspend does not remove the entity from your environment, but the market does not include the entity in its analysis. Based on market conditions, analysis can recommend restarting suspended entities, which includes them in market analysis once again. ▪ ADD PROVIDER: This is equivalent to the START action, but for storage entities. ▪ CHANGE: Move a virtual machine's storage between datastores. ▪ PROVISION: Add capacity to your environment. ▪ RECONFIGURE: Analysis recommends this when a VM is not able to correct a misconfiguration via another type of action. For example, analysis can recommend a RECONFIGURE action when a placement policy requires a VM to move to a host on a particular cluster, but cross-cluster moves are not permitted. ▪ DELETE: This is equivalent to the SUSPEND action, but for storage entities. ▪ RESERVE_ON_PM: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular host. ▪ RESERVE_ON_DS: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular datastore. ▪ RESIZE_FOR_EFFICIENCY: A resize that reduces the capacity of a commodity, such as vCPU, or vMEM. ▪ RESIZE_FOR_PERFORMANCE: A resize that increases the capacity of a commodity, such as vCPU, or vMEM.
cleared	<p>Default: false.</p> <p>When true, actions that were removed from the action list before being executed will be returned.</p>
costType	<ul style="list-style-type: none"> ▪ Saving An action that will decrease cloud spending.

Criteria	Description
	<ul style="list-style-type: none"> Investment An action that will increase cloud spending.
cumulative	<p>Default: false.</p> <p>When true, shows the savings for each action in a scope as a cumulative total, rather than showing the savings for individual actions.</p>
environmentType	<ul style="list-style-type: none"> ONPREM: Returns only actions related to entities that are part of your on-premises environment. CLOUD: Returns only actions related to entities that are part of your cloud environment.
groupBy	You may group the actions returned by the following criteria: [actionModes, actionStates, actionTypes, risk, riskSeverity, riskSubCategory]
hasReservedInstance	<p>Default: false.</p> <p>When true, only actions that are related to reserved instances will be returned.</p>
relatedEntityTypes	<p>Returns only actions related to entities of these types within the scope. For example, if your scope is a virtual datacenter and you specify VirtualMachine as a related entity type, the request will include only those actions related to VMs in the specified virtual datacenter.</p> <p>Choose from the following entity types: [Datacenter, PhysicalMachine, VirtualMachine, Storage, Application, Chassis, DiskArray, IOModule, StorageControl, Switch, VirtualDataCenter, VPod, DPod, Container, Database, DatabaseServerContainer, Logical-Pool]</p>
riskSeverityList	Returns only actions of the given severities: [Unknown, Normal, Minor, Major, Critical]
riskSubCategoryList	returns only actions of the given subcategories: [Performance Assurance, Efficiency Improvement, Prevention, Compliance]

Example: POST https://10.10.10.10/api/v3/targets/___xwWYAE3EeiNKPbzHdETIA/actions

Example inputDto, filtering for actions that are pending acceptance:

```
{
  "actionStateList": [
    "PENDING_ACCEPT"
  ]
}
```

Response: An array of actions applicable to the specified target that are in the PENDING_ACCEPT state.

```
[
  {
    "links": [
      {
```

```

    "rel": "self",
    "href": "https://10.10.10.10/api/v3/actions/_uictIJuHEeics6ASgJ-kdg"
  },
  {
    "rel": "self",
    "href": "https://10.10.10.10/api/v3/actions/2204259249360"
  }
],
"uuid": "_uictIJuHEeics6ASgJ-kdg",
"createTime": "2018-08-08T23:53:08-04:00",
"actionType": "RIGHT_SIZE",
"actionState": "PENDING_ACCEPT",
"actionMode": "MANUAL",
"details": "Scale down VMem for VirtualMachine btc-1 from 8 GB to 7 GB",
"importance": 0,
"target": {
  "uuid": "4223dcd6-0b28-6ae6-1066-689912ced3a1",
  "displayName": "btc-1",
  "className": "VirtualMachine",
  "aspects": {
    "virtualMachineAspect": {
      "os": "Other Linux (64-bit)",
      "connectedNetworks": [
        {
          "uuid": "74c91ba4fa390030f47f91e6e1ee77ff7b4db353",
          "displayName": "VM Network"
        }
      ]
    },
    "numVCPUs": 1,
    "ebsOptimized": false
  }
},
"environmentType": "ONPREM"
},
"currentEntity": {
  "uuid": "_ui4yAZuHEeics6ASgJ-kdg",
  "className": "VMem"
},
"newEntity": {
  "uuid": "_ui4yA5uHEeics6ASgJ-kdg",
  "className": "VMem"
},
"currentValue": "8388608.0",
"newValue": "7340032.0",
"resizeToValue": "7340032.0",
"risk": {
  "uuid": "_ujB78ZuHEeics6ASgJ-kdg",
  "subCategory": "Efficiency Improvement",
  "description": "Underutilized VMem in Virtual Machine 'btc-1'",
  "severity": "MINOR",
  "reasonCommodity": "VMem",
  "importance": 0
},
"stats": [
  {
    "name": "costPrice",
    "filters": [
      {
        "type": "savingsType",
        "value": "savings"
      }
    ]
  },
  {
    "units": "$",
    "value": 50
  }
]
}

```

```

],
  "actionID":2204259249360
},
...
}
]

```

Entities For a Specified Target

Referenced Endpoint: [Entities \(on page 59\)](#)

Gets a list of entities discovered by the specified target. This is used most often for reporting, dashboard, or inventory purposes.

Getting An Array of Entities

Gets a list of all entities discovered by the specified target. An entity is any device in your environment that Workload Optimization Manager manages, such as applications, physical machines, VMs, storage, and datacenters.

Example:GET https://10.10.10.10/api/v3/targets/___xwWYAE3EeiNKPbzHdETIA/actions

Response: An array of EntityApiDTO objects belonging to a vCenter target:

```

[
  {
    "links":[
      {
        "rel":"self",
        "href":"https://10.10.10.10/api/v3/entities/vsphere-mycorp.com-ResourcePool-resgroup-8?include_aspects=false"
      }
    ],
    "uuid":"vsphere-mycorp.com-ResourcePool-resgroup-8",
    "displayName":"Resources-Cluster1",
    "className":"VirtualDataCenter",
    "priceIndex":1e-12,
    "state":"ACTIVE",
    "severity":"Normal",
    "discoveredBy":{
      "uuid":"___xwWYAE3EeiNKPbzHdETIA",
      "displayName":"vsphere-mycorp.com",
      "type":"vCenter"
    },
    "remoteId":"resgroup-8",
    "environmentType":"ONPREM"
  },
  {
    "links":[
      {
        "rel":"self",
        "href":"https://10.10.10.10/api/v3/entities/vsphere-mycorp.com-GuestLoad-421ddc94-8d0c-504a-62f5-493802e96d0a?include_aspects=false"
      }
    ],
    "uuid":"vsphere-mycorp.com-GuestLoad-421ddc94-8d0c-504a-62f5-493802e96d0a",
    "displayName":"GuestLoad[Nexus1000V]",
    "className":"Application",
    "priceIndex":1,
    "state":"ACTIVE",
    "severity":"Normal",
    "discoveredBy":{
      "uuid":"___xwWYAE3EeiNKPbzHdETIA",

```

```

    "displayName": "vsphere-mycorp.com",
    "type": "vCenter"
  },
  "remoteId": "vm-51",
  "environmentType": "ONPREM"
},
...
}
]

```

Templates Endpoint

Workload Optimization Manager uses templates to reserve resources and deploy workload in your environment, to calculate supply or demand changes in a plan, and to calculate workloads for cloud environments.

Using the templates endpoint, you can:

- Get a list of templates available to your Workload Optimization Manager appliance
- Get information needed to create templates, such as supported OSes and CPUs
- Create a template
- Edit and Delete templates

Templates Utility Requests

Utility requests provide metadata that you can use to make related requests, assemble inputDTOs, or see the potential values of a particular DTO.

The templates endpoint contains utility requests that show the possible values for several optional fields used to create detailed templates. These can be used to find the supported cloud OSes and CPU models.

Getting a List of CPU Models

Gets a list of valid CPU Models. If given a CPU Model, Workload Optimization Manager can more accurately reflect your CPU capacity in market decisions.

Example: GET <https://10.10.10.10/api/v3/templates/physicalmachine/cpumodels>

Result: A list of CpuModelApiDTOs, describing the cores, speed, and internal scaling factor for each CPU. This information will be used to provide more granular CPU data, if passed as part of a TemplateApiInputDTO:

```

[
  {
    "numCores": 4,
    "speed": 3500,
    "scalingFactor": 1.116909571123129,
    "modelName": "AMD A10 PRO-7800B"
  },
  {
    "numCores": 4,
    "speed": 3700,
    "scalingFactor": 0.9745581799084503,
    "modelName": "AMD A10 PRO-7850B"
  },
  ...
  {
    "numCores": 8,

```

```

"speed": 1415,
"scalingFactor": 1.1638948014750774,
"modelName": "UltraSPARC T2 Plus"
}
]

```

Templates Requests

Template requests handle creation, configuration, editing and deletion of templates on your Workload Optimization Manager appliance.

Getting a List of Templates

Gets a list of templates available to your Workload Optimization Manager instance. This list will include both templates discovered from underlying targets and those created through the Workload Optimization Manager UI. To get a specific template, pass the template UUID as part of the request.

Examples:

- All Templates: GET <https://10.10.10.10/api/v3/templates>
- Single Target: GET https://10.10.10.10/api/v3/templates/_v0Q70MpiEd-hypXfJzX8Wg

Response: A list of TemplateApiDTOs:

```

[
  {
    "links": [
      {
        "rel": "self",
        "href": "https://10.10.10.10/api/v3/templates/_v0Q70MpiEd-hypXfJzX8Wg"
      }
    ],
    "uuid": "_v0Q70MpiEd-hypXfJzX8Wg",
    "displayName": "Small",
    "className": "PhysicalMachineProfile",
    "price": 5000,
    "computeResources": [
      {
        "stats": [
          {
            "name": "numOfCores",
            "value": 4
          },
          {
            "name": "cpuSpeed",
            "units": "MHz",
            "value": 2992
          },
          {
            "name": "ioThroughputSize",
            "units": "MB/s",
            "value": 890
          },
          {
            "name": "memorySize",
            "units": "MB",
            "value": 32759
          },
          {
            "name": "networkThroughputSize",
            "units": "MB/s",

```



```

        "value": 512
      }
    ]
  },
],
"infrastructureResources": [
  {
    "stats": [
      {
        "name": "powerSize",
        "value": 1
      },
      {
        "name": "spaceSize",
        "value": 1
      },
      {
        "name": "coolingSize",
        "value": 1
      }
    ]
  }
],
"discovered": false
},
{
  "links": [
    {
      "rel": "self",
      "href": "https://10.10.10.10/api/v3/templates/_v0Q70cpiEd-hypXfJzX8Wg"
    }
  ],
  "uuid": "_v0Q70cpiEd-hypXfJzX8Wg",
  "displayName": "Medium",
  "className": "PhysicalMachineProfile",
  "price": 10000,
  "computeResources": [
    {
      "stats": [
        {
          "name": "numOfCores",
          "value": 4
        },
        {
          "name": "cpuSpeed",
          "units": "MHz",
          "value": 2992
        },
        {
          "name": "ioThroughputSize",
          "units": "MB/s",
          "value": 1780
        },
        {
          "name": "memorySize",
          "units": "MB",
          "value": 65519
        },
        {
          "name": "networkThroughputSize",
          "units": "MB/s",
          "value": 512
        }
      ]
    }
  ]
}
}

```

```

],
"infrastructureResources": [
  {
    "stats": [
      {
        "name": "powerSize",
        "value": 1
      },
      {
        "name": "spaceSize",
        "value": 1
      },
      {
        "name": "coolingSize",
        "value": 1
      }
    ]
  }
],
"discovered": false
},
...
]

```

Creating a Template

Creates a template for use in your environment. You must pass a completed TemplateApiInputDTO as the inputDTO. You can create templates for virtual machines, physical machines, storage, and containers.

Example: POST <https://10.10.10.10/api/v3/templates>

Example inputs:

Template Type	Example Input
Container	<pre> { "computeResources": [{ "stats": [{ "name": "ioThroughput", "value": 0 }, { "name": "networkThroughput", "value": 0 }, { "name": "memorySize", "value": 8192 }, { "name": "cpuSpeed", "value": 1536 }] }], "storageResources": [</pre>

Template Type	Example Input
	<pre> "stats":[{ "name":"diskSize", "value":20 }] }, "className":"ContainerProfile", "displayName":"ContainerTemplate1" } </pre>
Physical Machine	<pre> { "cpuModel":"AMD A10-5700", "computeResources":[{ "stats":[{ "name":"ioThroughputSize", "value":1000 }, { "name":"networkThroughputSize", "value":1000 }, { "name":"memorySize", "value":8192 }, { "name":"numOfCores", "value":4 }, { "name":"cpuSpeed", "value":"3400" }] }], "price":0, "className":"PhysicalMachineProfile", "displayName":"HostTemplate1" } </pre>
Storage	<pre> { "storageResources":[{ "stats":[{ "name":"diskIops", "value":250 }, { </pre>

Template Type	Example Input
	<pre> "name": "diskSize", "value": 750 }] }, "price": 0, "className": "StorageProfile", "displayName": "StorageTemplate1" } </pre>
Virtual Machine	<pre> { "computeResources": [{ "stats": [{ "name": "ioThroughput", "value": 0 }, { "name": "networkThroughput", "value": 500 }, { "name": "memorySize", "value": 4096 }, { "name": "memoryConsumedFactor", "value": 70 }, { "name": "numOfCpu", "value": 2 }, { "name": "cpuSpeed", "value": 1024 }, { "name": "cpuConsumedFactor", "value": 75 }] }], "storageResources": [{ "type": "disk", "stats": [{ "name": "diskIops", "value": 50 }, { "name": "diskSize", "value": 20 }] }] } </pre>

Template Type	Example Input
	<pre> { "name": "diskConsumedFactor", "value": 70 }] }] } </pre>

Response: The `TemplateApiInputDTO` for the template created. In this case, a virtual machine template:

```

{
  "uuid": "_lmaQoLUtEei5nORDMStFGA",
  "displayName": "VirtualMachineTemplate1",
  "className": "VirtualMachineProfile",
  "computeResources": [
    {
      "stats": [
        {
          "name": "numOfCpu",
          "value": 2.0
        },
        {
          "name": "cpuSpeed",
          "units": "MHz",
          "value": 1024.0
        },
        {
          "name": "cpuConsumedFactor",
          "units": "%",
          "value": 75.0
        },
        {
          "name": "memorySize",
          "units": "MB",
          "value": 4096.0
        },
        {
          "name": "memoryConsumedFactor",
          "units": "%",
          "value": 70.0
        },
        {
          "name": "ioThroughput",
          "units": "MB/s",
          "value": 0.0
        },
        {
          "name": "networkThroughput",
          "units": "MB/s",
          "value": 500.0
        }
      ]
    }
  ],
  "storageResources": [
    {
      "stats": [
        {
          "name": "diskIops",
                    
```

```

        "value":50.0
      },
      {
        "name":"diskSize",
        "units":"GB",
        "value":20.0
      },
      {
        "name":"diskConsumedFactor",
        "units":"%",
        "value":70.0
      }
    ],
    "type":"disk"
  }
],
"deploymentProfile":{
  "uuid":"_1lbZMrUtEei5nORDMStFGA",
  "displayName":"VirtualMachineTemplate1_DeploymentProfile",
  "className":"ServiceCatalogItem",
  "deployParameters":[
    {
      "targetType":"vCenter",
      "providers":[
        {
          "provider":{
            "uuid":"dfe657268310d8b128d441b2a34ec0721e72ee7e",
            "displayName":"Development DC7",
            "className":"DataCenter",
            "discoveredBy":{
              "uuid":"_OjF3UJwFEei_xJ5Ai6-rnQ",
              "displayName":"vsphere-dc7.mycorp.com",
              "type":"vCenter"
            }
          }
        },
        {
          "parameters":[
            {
              "parameterType":"image",
              "properties":[
                {
                  "name":"id",
                  "value":"path/to/image"
                }
              ]
            }
          ]
        }
      ]
    }
  ]
},
"discovered":false
}

```

Editing a Template

Edits a user-created template, given the template UUID and the edited DTO. To edit discovered templates, edit them on the target from which they originate. Note that you must pass a complete TemplateApiDTO with the edited fields.

Example: PUT https://10.10.10.10/api/v3/templates/_lmaQoLUtEei5nORDMStFGA

Example input: Note that both the `displayName` and `diskConsumedFactor` values were changed:

```

{
  "computeResources": [
    {
      "stats": [
        {
          "name": "ioThroughput",
          "value": 0
        },
        {
          "name": "networkThroughput",
          "value": 500
        },
        {
          "name": "memorySize",
          "value": 4096
        },
        {
          "name": "memoryConsumedFactor",
          "value": 70
        },
        {
          "name": "numOfCpu",
          "value": 2
        },
        {
          "name": "cpuSpeed",
          "value": 1024
        },
        {
          "name": "cpuConsumedFactor",
          "value": 75
        }
      ]
    }
  ],
  "storageResources": [
    {
      "type": "disk",
      "stats": [
        {
          "name": "diskIops",
          "value": 50
        },
        {
          "name": "diskSize",
          "value": 20
        },
        {
          "name": "diskConsumedFactor",
          "value": 75
        }
      ]
    }
  ],
  "className": "VirtualMachineProfile",
  "displayName": "VirtualMachineTemplate1_Modified",
  "deploymentProfileId": "_1lbZMrUtEei5nORDMStFGA"
}
    
```

Response: The modified TemplateApiDTO reflecting the submitted changes.

Deleting a Template

Deletes the specified template. This will not delete associated deployment profiles, and deployments already scheduled to use this template will not succeed.

Example: DELETE `https://10.10.10.10/api/v3/templates/_lmaQoLUtEei5nORDMStFGA`

Response: A successful deletion will return true.

Topology Definitions Endpoint

Workload Optimization Manager gives you the ability to create your own Business Applications, Business Transactions, and Services without the need to ingest additional application data into the Workload Optimization Manager platform. This is especially useful in cases where there are gaps in the application stack shown in the Workload Optimization Manager supply chain. For example, in the absence of an application monitoring target such as AppDynamics or Dynatrace, you will not see Business Applications in your supply chain. This feature addresses those gaps.

When you create a new application entity, you identify interrelated application entities and nodes in your existing environment for which you want to measure performance, so Workload Optimization Manager can link them in a supply chain and represent them as a unified group. You can monitor overall performance for the group in the context of the new application entity, and drill down to the individual entities and nodes for finer details.

Using the topology definitions endpoint of the Workload Optimization Manager API, you can:

- Get a single topology definition or list of topology definitions present in your environment
- Create a topology definition
- Edit a topology definition
- Delete a topology definition

Topology Definition Requests

Topology definition requests handle creation, configuration, editing, and deletion of topology definitions on your Workload Optimization Manager appliance.

Getting Topology Definitions

For a list of topology definitions, the API returns an array of TopologyDataDefinitionApiDTO. Each TopologyDataDefinitionApiDTO will contain the UUID, entity type, and connection attributes for the defined topology. To get a single topology definition, include the UUID of the topology definition in the request.

Examples:

- All Topology Definitions: GET `https://10.10.10.10/api/v3/topologydefinitions`
- Single Topology Definition: GET `https://10.10.10.10/api/v3/topologydefinitions/284711321829968`

Response:

```
{
  "uuid": "284711313871856",
  "displayName": "Daltest1__App",
  "entityType": "BusinessApplication",
  "entityDefinitionData": {
    "namePrefix": "Daltest1_",
    "entityType": "VirtualMachine",
    "generationAndConnectionAttribute": {
      "expVal": "App",
      "expType": "EQ",

```



```

    "filterType": "virtualMachinesByTag",
    "caseSensitive": true,
    "entityType": null,
    "singleLine": false
  }
}
}

```

Creating a Manual Topology Definition

To create a manual topology definition, you must provide the `entityType` of the definition, and manual mapping data to the entities to use. Consider the following input DTO to create a manual topology definition:

```

{
  "entityType": "BusinessApplication",
  "entityDefinitionData": {
    "manualConnectionData": {
      "BusinessTransaction": {
        "staticConnections": [
          "73585155548499",
          "73585155548500"
        ]
      },
      "Service": {
        "staticConnections": [
          "73585155548487",
          "73585155608929"
        ]
      },
      "ApplicationComponent": {
        "staticConnections": [
          "73596151905427",
          "73596151905425",
          "73596151905428",
          "73596151905429"
        ]
      },
      "VirtualMachine": {
        "staticConnections": [
          "73586657216608",
          "73585300874097",
          "73586657216576"
        ]
      },
      "DatabaseServer": {
        "staticConnections": [
          "73585314633044",
          "73585314632869",
          "73585314632946"
        ]
      },
      "Container": {
        "staticConnections": [
          "73585323455544",
          "73582124234229",
          "73585385438946"
        ]
      },
      "ContainerPod": {
        "staticConnections": [
          "73585334243044",
          "73585314324535",
          "73585314533256"
        ]
      }
    }
  }
}

```

```

    ]
  }
},
"displayName": "DalManualtest_"
}

```

In the `manualConnectionData` parameter of the `entityDefinitionData`, the UUIDs of the related entities have been provided for each level of the supply chain for which the topology should be instantiated.

The creation can be as simple or complex as desired. For example, a simple manual topology may look like the following:

```

{
  "entityType": "BusinessTransaction",
  "entityDefinitionData": {
    "manualConnectionData": {
      "Service": {
        "staticConnections": [
          "73585155548487"
        ]
      },
      "Container": {
        "staticConnections": [
          "73596151905298"
        ]
      }
    }
  },
  "uuid": "284711514573216",
  "displayName": "DalManualSimple"
}

```

Creating an Automated Topology Definition

To create an automated topology definition, you must provide the `entityType` of the definition, and the data that makes up the regular expression used to determine dynamic group membership. Consider the following input DTO to create an automated topology definition:

```

{
  "entityType": "BusinessApplication",
  "entityDefinitionData": {
    "entityType": "VirtualMachine",
    "namePrefix": "Daltest1_",
    "generationAndConnectionAttribute": {
      "expType": "EQ",
      "expVal": "App",
      "filterType": "vmsByTag",
      "caseSensitive": false
    }
  }
}

```

In the `generationAndConnectionAttribute` parameter of the `entityDefinitionData`, the information that makes up the regular expression is sent. In this instance, it will match any virtual machine whose tag value equals "App".

Editing a Topology Definition

Edits the input fields of an existing topology definition, and accepts the modified `TopologyDataDefinitionApiDTO` as input.

NOTE: You can GET the topology definition first using the GET /topologydefinition/UUID request to see the current configuration. Note that you must pass all fields in the modified TopologyDataDefinitionApiDTO, not only the changed fields.

A successful edit will return the modified TopologyDataDefinitionApiDTO.

Example: PUT `https://10.10.10.10/api/v3/topologydefinitions`

Deleting a Topology Definition

Deletes the specified topology definition and removes all created entities. This will also remove any pending actions related to the deleted entities.

Example: DELETE `https://10.10.10.10/api/v3/topologydefinitions/284711321829968`

Response: A successful deletion request returns a Response Code of 200.

Workflows Endpoint

When added to your Workload Optimization Manager installation, Orchestrator targets assign workflows that execute multiple actions to make changes in your environment. Workload Optimization Manager discovers workflows that you have defined on the orchestrator. You can then set up an automation policy that maps workflows to actions. If the action mode is Manual or Automatic, then when Workload Optimization Manager recommends the action, it will direct the orchestrator to use the mapped workflow to execute it.

For more information about specific Orchestrator targets, see "Orchestrator Targets" in the *Target Configuration Guide*. For more information about execution of workflows, see "Action Orchestration" in the *User Guide*.

Using the workflows endpoint, you can:

- Get a list of all workflows
- Get detailed information about a specified workflow

Workflows Requests

Getting Workflows

For a list of workflows, the API returns an array of WorkflowApiDTOs. Each WorkflowApiDTO object will contain detailed information about that workflow, including description and parameters. To get a single workflow, include the UUID of the workflow in the request.

This call takes the following parameter:

type	Filters the request by type of workflow. [UCSD, AWS_Service_Catalog]
------	--

Examples:

- All Workflows: GET `https://10.10.10.10/api/v3/workflows`
- Single Workflow: GET `https://10.10.10.10/api/v3/workflows/UCSD-WF-ucsd.eng.mycorp.com-103`

Response:

```
[
  {
    "links": [
      {
```

```

    "rel": "self",
    "href": "https://10.10.10.10/api/v3/workflows/UCSD-WF-ucsd.eng.mycorp.com-103"
  }
],
"uuid": "UCSD-WF-ucsd.eng.mycorp.com-103",
"displayname": "APIC Container Delete Firewall Rule Action",
"classname": "Workflow",
"actiontype": "NONE",
"parameters": [
  {
    "name": "APIC_TENANT_L4L7_EPG_ACE_IDENTITY",
    "ismandatory": true,
    "issecret": false,
    "specificvaluetype": "ApicTenantL4L7EPGAceIdentity"
  },
  {
    "name": "L4L7Identity",
    "ismandatory": true,
    "issecret": false,
    "specificvaluetype": "gen_text_input"
  },
  {
    "name": "ACLName",
    "ismandatory": true,
    "issecret": false,
    "specificvaluetype": "gen_text_input"
  },
  {
    "name": "ACENAME",
    "ismandatory": true,
    "issecret": false,
    "specificvaluetype": "gen_text_input"
  }
],
"discoveredby": {
  "uuid": "__U1MIJv-Eei_xJ5Ai6-rnQ",
  "displayname": "ucsd.eng.mycorp.com",
  "type": "Cisco UCS Director"
}
],
...
}
]

```

Getting Workflows of a Specific Type

By adding the type parameter to the `/api/v3/workflows` request, you can filter workflows from a specific source. For example, the response to this request will be an array of `WorkflowApiDTOs` discovered through UCS Director targets:

Example: GET `https://10.10.10.10/api/v3/workflows?type=UCSD`



Workload Optimization Manager Cookbook

Purpose

The Workload Optimization Manager cookbook is intended to assist in performing specific tasks using the API, and answering commonly-asked questions while presenting Workload Optimization Manager API best practices. This section of the API Guide is a living document, meaning that it is constantly being added to.

Cookbooks

Each cookbook contains one or more recipes. Each recipe will contain all the necessary information to complete the specified task, along with a basic script showing the functionality of the recipe.

- [Authenticating with the Workload Optimization Manager API \(on page 269\)](#)
- [Plan Results Cookbook \(on page 272\)](#)
 - [Seeing Changes to a Subset of Entities \(on page 272\)](#)

Authenticating With the API

Objective

To obtain an authentication token after logging in with the API, and use that token on subsequent API calls.

Authentication in the API

To use the API, you must have a valid user account on the Workload Optimization Manager instance. Also note that accounts can have different roles. The API will only execute commands that are valid for your user role. For example, to execute Workload Optimization Manager recommended actions, your account must have a role of either `administrator`, `deployer`, or `automator`.

To make API calls, you request an authentication token and pass it with each call to the Workload Optimization Manager API. The token request returns a cookie for your authentication. A common way to use this token is to store the cookie locally, and pass it with your API calls.

Example: `curl -s -k -c /tmp/cookies -H 'accept: application/json' 'https://localhost/api/v3/login?hateoas=true' -d 'username=administrator&password=password'`

Then, each request must use the `-b cookie-filename` parameter to use the session cookie delivered by the login request.

Another approach is to get the authentication header and parse out the authentication cookie. Then you can create a header for each API request that includes the cookie. For example, assume you store the value in a variable named `token`. You could use it like this:

```
headers = {'cookie': token}
r = requests.get('https://10.10.123.456/api/v3/targets/specs', headers=headers, verify=False, stream=True)
```

Prerequisites

In order to obtain an authentication token, you must have the following information:

- The IP address of the Workload Optimization Manager instance.
- The username and password of the user who will be logged in.

Procedure

To obtain an authentication token:

1. Construct the API payload.

The input body should be JSON, in the following format with your credentials in place of `myUsername` and `myPassword`:

```
{'username': 'myUsername', 'password': 'myPassword'}
```

2. Make the API request.

Use the POST `https://[INSTANCE_IP]/api/v3/login` request, with the input body constructed in the previous step.

3. Retrieve the authentication token from the response headers.

Example headers:

```
{
  'Server': 'nginx',
  'Date': 'Mon, 01 Feb 2021 20:17:02 GMT',
  'Content-Type': 'application/json',
  'Transfer-Encoding': 'chunked',
  'Connection': 'keep-alive',
  'Vary': 'Accept-Encoding',
  'Set-Cookie': 'JSESSIONID=node0jzerbqte09pelj29x6ypo92fh17.node0; Path=/; HTTPOnly; Secure',
  'Expires': 'Thu, 01 Jan 1970 00:00:00 GMT',
  'X-Content-Type-Options': 'nosniff',
  'X-XSS-Protection': '1; mode=block',
  'Strict-Transport-Security': 'max-age=63072000; includeSubDomains',
  'X-Frame-Options': 'SAMEORIGIN',
  'X-Turbo-Upstream': 'API',
  'Content-Encoding': 'gzip'
}
```

The authentication token is the first `;`-separated token in the value of the `Set-Cookie` header. In this example, it is `JSESSIONID=node0jzerbqte09pelj29x6ypo92fh17.node0`.

Using the Authentication Token in Subsequent API Requests

Once you have obtained an authentication token, you can use that token to make further API requests. To do so, include a header in your request with the name of `cookie` and a value of the token. For example:

```
{'cookie': 'JSESSIONID=node0jzerbqte09pelj29x6ypo92fh17.node0' }
```

Script Example

These listings show a function that gets the authentication token from the cookie, and a script that invokes the function and prints out the token value.

Function to get the token:

To invoke this function, pass the IP address, the username, and password as arguments. The function builds the authentication payload and requests the token from the given Workload Optimization Manager instance. It then parses out the first token in the Set-Cookie header and returns that value.

```
import json
import requests
import urllib3
urllib3.disable_warnings()

def get_cookie(ip, username, password):
    payload = {'username': username, 'password': password}
    r = requests.post(f'https://{ip}/api/v3/login', data=payload, verify=False)
    r.encoding = 'JSON'
    rh = r.headers
    token = rh['Set-Cookie'].split(';')[0]

    return token
```

Script that calls the function:

Assume the script is saved as `use_login.py`. Also assume the function is in the file `./login.py`. To invoke this script, open a shell at the script file location and enter:

```
./use-login.py <My_IP_Address> <My_Username> <My_Pwd>
```

where the three arguments are the IP address of your Workload Optimization Manager, your username, and your password, respectively. The script imports the `./login.py` file and checks for four arguments (the script name and the three arguments you passed). It then executes the `login.get_cookie()` function. The function returns a token, which the script then prints out.

```
#!/usr/bin/env python3

import sys
import login

if len(sys.argv) != 4:
    print("Incorrect arguments list.")
    sys.exit()

token = login.get_cookie(sys.argv[1], sys.argv[2], sys.argv[3])
print(f'TOKEN IS: {token}')
```

Script Result

The result of this script displays the authentication token:

```
TOKEN IS: JSESSIONID=node0jzerbqte09pe1j29x6ypo92fh17.node0
```

Plan Results Cookbook

This cookbook explores plan markets in Workload Optimization Manager. Interpreting and parsing this plan market will enable you to better understand how and why Workload Optimization Manager has performed a certain action on a particular entity, how the resources- both used and available- have changed, and more as recipes are added to the cookbook.

NOTE: The Workload Optimization Manager UI has certain plan configuration options, available to present a base set of configuration changes to accomplish a particular goal. For example, the Add Workload plan is preconfigured to expect additional workloads to be provisioned. To see how Workload Optimization Manager creates these configurations, view the DTOs for the UI plan configurations at [Scenario Examples \(on page 173\)](#).

Related Endpoints

When interpreting plan results, the following endpoints are commonly used to retrieve and clarify data:

- [Actions \(on page 29\)](#): Retrieving the actions for the plan market will enable you to see what entities were directly affected during the run of the plan.
- [Entities \(on page 59\)](#): Retrieving the entities for the plan market will enable you to see a full listing of the entities involved in the plan.
- [Groups \(on page 87\)](#): Retrieving the groups for the plan market will enable you to more easily obtain UUID information for the entities in the specified group.
- [Statistics \(on page 220\)](#): Retrieving the market statistics for the plan market as a whole, a group, or an entity will enable you to easily see a broad overview of the state of the entity utilization after the plan has finished.

Use Case Index

The Plan Results Cookbook has the following recipes:

- [Seeing Changes to a Subset of Entities \(on page 272\)](#)

Seeing Changes to a Subset of Entities

Objective

After running a plan, you may want to see the effects of your plan on a particular entity or group of entities. This can help you better understand the effect your configuration changes would have on a subset of plan entities, or to explore why Workload Optimization Manager made specific action recommendations.

For example, assume that there is a virtual machine that shares dependencies with a number of other entities. Apart from the overall plan results, you might want to take a closer look at how the plan impacts this VM in particular.

Prerequisites

In order to investigate the changes to the specified entity, you need to know:

- The UUID of a successfully completed plan market

To obtain this UUID, either get it from the API response sent when you POST a scenario to the market, or execute the GET `/markets` request, and find the market whose name corresponds with the name of the scenario. Alternately, you can find the scenario's UUID in the `scenario` parameter of the plan market. Verify that the `state` parameter has a value of `SUCCEEDED`. For example, the UUID of the scenario that created the following plan market is 214410933912976, and the UUID of the plan market itself is 214410933923968:

```
{
  "uuid": "214410933923968",
  "displayName": "Optimize Cloud 2",
```



```

"className": "Market",
"state": "SUCCEEDED",
"stateProgress": 100,
"scenario": {
  "uuid": "214410933912976",
  "displayName": "Optimize Cloud 2",
  ...
}
...
}

```

For cases where the same scenario has been applied to multiple plans, be sure to check the plan's `runDate` parameter corresponds to the time you expect the plan to have run.

For more information about creating and running scenarios, see [Scenario DTO Breakdown \(on page 161\)](#).

- The UUID(s) of the entities you want to inspect

Entity UUIDs in a plan market are identical to their real-time market counterparts. This means you can get the UUIDs either from searching the plan market for a related field (for example, the `displayName` of the entity) or searching in the Workload Optimization Manager user interface to find the entity UUID.

You can also use the API's Search endpoint to search for entities by different criteria.

Related Endpoints

When interpreting plan results, the following endpoints are commonly used to retrieve and clarify data:

- [Actions \(on page 29\)](#): Retrieving the actions for the plan market will enable you to see what entities were directly affected during the run of the plan.
- [Entities \(on page 59\)](#): Retrieving the entities for the plan market will enable you to see a full listing of the entities involved in the plan.
- [Groups \(on page 87\)](#): Retrieving the groups for the plan market will enable you to more easily obtain UUID information for the entities in the specified group.
- [Statistics \(on page 220\)](#): Retrieving the market statistics for the plan market as a whole, a group, or an entity will enable you to easily see a broad overview of the state of the entity utilization after the plan has finished.

Procedure

To investigate changes to a particular subset of plan entities:

1. Get the list of UUIDs you want investigate.

To get all the entities in a market:

```
markets/{market_uuid}/entities
```

If the scope of the plan is small, you can use this to get all the entities in the plan, and then iterate through the results for other attributes such as entity type or display name.

```
markets/{market_uuid}/entities
```

For a large scope, you can use the Search endpoint to find VMs by specific criteria. This works because the plan market and the real-time market use the same UUID values for the same entities. For example, the following call gets all VMs that have the string FOO in their names:

```
https://10.10.123.456/api/v3/search?q=FOO&types=VirtualMachine&entity_types=VirtualMachine&query_type=CONTAINS
```

2. Get the list of plan actions.

Run `GET /markets/{market_Uuid}/actions` against the plan market. You can also use `POST /markets/{market_uuid}/actions` to post a filter for advanced action queries, such as only returning actions of a particular type, or particular risk severity.

Another way to get plan actions is to use the Search endpoint. You can POST search parameters that limit the returned actions by text in the description, cost type, or other data. For example, the following search returns only actions on VMs:

```
searchSpec = {
  "actionRelationTypeFilter": [
    "NONE"
  ],
  "costType": "SAVING",
  "descriptionQuery": {
    "query": "Virtual Machine",
    "type": "CONTAINS",
    "caseSensitive": "true"
  },
  "detailLevel": "STANDARD"
}
```

With the above payload, the following POST would return VM actions from the plan:

```
requests.post(f'https://{ip}/api/v3/markets/{marketUuid}/actions',
  headers=headers,
  json = searchSpec,
  verify=False,
  stream=True)
```

3. Search the API response and find the action(s) relevant to your entities.

Each action will have a `target` parameter, which will in turn have a `uuid`. This UUID identifies the entity the action executed on. This is the best way to locate your entity in a list of actions.

If no actions have the specified `target > uuid` value, then no actions were performed on the entity in question.

NOTE: You can use `GET /markets/{market_Uuid}/entities` to verify that the UUID you are searching for exists in the plan market. If it does not, it means that the entity was not included in the scope of the plan, or the entity is considered an idle workload. An idle workload shows no utilization, so the plan cannot determine optimal placement or what percentage of allocated resources that workload will require when it restarts.

4. Analyze the results.

Each action contains the information detailed in the `ActionApiDTO` data, including the details of the action, old/new values for any changed resources, a record of deletion for `DELETE` actions, etc.

Search through this DTO and make note of any parameters important to you. (For a DTO reference, see [ActionApiDTO \(on page 315\)](#).)

Script Example

The following script searches through the list of actions for a virtual machine, and returns the requested fields for quick comparison. In this case, the UUID, type, state, reason, risk category, and risk subcategory are returned for the action, and paired with the display name, template UUID, and location of the entity.

This script is easily extensible- for example, if `currentLocation > displayName` is equal to `newLocation > displayName`, you may choose not to show either of those fields, as no change involving the VM location was made. You might also use these results to make further calls- for example, using the template UUID to make a `GET /templates/{template_Uuid}` request to return more information about the template being used for a resize action.

Note that the script uses dot-notation to name the fields you want to inspect. It includes the `getFieldFromDict` function to convert those fields to nested Python dictionary values. Because the API returns JSON data, a function like this could be a generally useful utility.

```
#!/usr/bin/env python3
```

```
#
# Commandline args: platformIP, username, pwd, marketID, VmIDs as comma-sep string (no spaces)
# EXAMPLE: ./entity_changes.py 10.10.123.456 MyUser MyPwd 215426452602368
# 74635124762083,74635124762088,74635124762090
#
import json
import requests
import urllib3
import re
```

```
import sys
sys.path.append('../login') #This makes login visible...
import login
```

```
#
# This function takes json-like dot-notation fields and returns python dictionary values.
# That makes it easier to specify the DTO fields you want to view.
#
def getFieldFromDict(field, dict):
    fToks = field.split('.')
    l = len(fToks)
    workingDict = dict
    for item in fToks:
        if item in workingDict:
            ret = workingDict[item]
        else:
            return "ITEM NOT IN OBJECT"
        l -= 1
    if l == 0:
        return ret
    else:
        workingDict = ret
    return ret
```

```
#
# This list of fields you want to query, in dot-notation
#
RetrieveFields = [
    "uuid",
    "actionType",
    "actionState",
    "details",
    "currentEntity.displayName",
    "newEntity.displayName",
    "template.uuid",
    "risk.subCategory",
    "risk.description",
    "currentLocation.displayName",
    "newLocation.displayName"
]
```

```
#
# A search spec to get actions that are on VMs.
#
searchSpec = {
    "actionRelationTypeFilter": [
        "NONE"
    ],
    "costType": "SAVING",
    "descriptionQuery": {
        "query": "Virtual Machine",
        "type": "CONTAINS",
        "caseSensitive": "true"
    },
}
```

```

"detailLevel": "STANDARD"
}

#
# Make sure you have the correct count of arguments.
#
if len(sys.argv) != 6:
    print("Incorrect arguments list.")
    sys.exit()

#
# Get the args into well named vars, and also authenticate.
#
ip = sys.argv[1]
marketUuid = sys.argv[4]
ElemsToInspect = sys.argv[5].split(',')

token = login.get_cookie(ip, sys.argv[2], sys.argv[3])
headers = {'cookie': token}

#
# Search plan for actions on VMs
#
actions_r = requests.post(f'https://{ip}/api/v3/markets/{marketUuid}/actions', headers=headers, json =
    searchSpec, verify=False, stream=True)

if actions_r.status_code != 200:
    print(f'Market Request Status is {actions_r.status_code}.')
    sys.exit()

#
# For each action that targets one of the entities you pass in the command line,
# parse the object and display the field values.
#
print("Plan Changes for Entity(ies):")
print(sys.argv[5])
print("-----")
r_json = actions_r.json()
for item in r_json:
    target = item['target']
    if 0 < ElmsToInspect.count(target["uuid"]):
        print(f'VM ACTION: {target["displayName"]}')
        for field in RetrieveFields:
            val = getFieldFromDict(field, item)
            print(f'    {field}: {val}')
```

Script Result

The result of this script displays the requested information for each plan entity:

```

Plan Changes for Entity(ies):
74635124762083,74635124762088
-----
VM ACTION: test-rosa-28tfg-worker-us-west-2a-5hr8j
  uuid: 145057709553360
  actionType: SCALE
  actionState: SUCCEEDED
  details: Scale Virtual Machine test-rosa-28tfg-worker-us-west-2a-5hr8j from m5.xlarge to r5a.large in
Advanced Engineering
```

```

currentEntity.displayName: m5.xlarge
newEntity.displayName: r5a.large
template.uuid: 74635137532084
risk.subCategory: Efficiency Improvement
risk.description: Underutilized VCPU, Net Throughput
currentLocation.displayName: aws-US West (Oregon)
newLocation.displayName: aws-US West (Oregon)
VM ACTION: test-rosa-28tfg-infra-us-west-2a-mw867
  uuid: 145057709553376
  actionType: SCALE
  actionState: SUCCEEDED
  details: Scale Virtual Machine test-rosa-28tfg-infra-us-west-2a-mw867 from r5.xlarge to r5a.xlarge in
  Advanced Engineering
    currentEntity.displayName: r5.xlarge
    newEntity.displayName: r5a.xlarge
    template.uuid: 74635137531741
    risk.subCategory: Efficiency Improvement
    risk.description: Increase RI Utilization
    currentLocation.displayName: aws-US West (Oregon)
    newLocation.displayName: aws-US West (Oregon)

```

Seeing the Changes for a Group of Entities

You can easily modify this script to see the changes for a particular group of entities without needing to know each UUID.

To perform this modification, consume the result of a GET `/groups/{group_uuid}/entities` request. Example result:

```

[
  {
    "uuid": "73422419372894",
    "displayName": "PT_RHEL",
    "className": "VirtualMachine",
    "priceIndex": 4.33,
    "state": "ACTIVE",
    "severity": "Normal",
    "costPrice": 0.24104111,
    "discoveredBy": {
      "uuid": "73422416392368",
      "displayName": "producttrust",
      "category": "Public Cloud",
      "type": "AWS",
      "readonly": false
    },
    ...
  },
  {
    "uuid": "73422419372988",
    "displayName": "PT_Resize_Up_Target",
    "className": "VirtualMachine",
    "priceIndex": 10074.822,
    "state": "ACTIVE",
    "severity": "Normal",
    "costPrice": 0.078387,
    "discoveredBy": {
      "uuid": "73422416392368",
      "displayName": "producttrust",
      "category": "Public Cloud",
      "type": "AWS",
      "readonly": false
    },
    ...
  },
  ...
]

```

```
},
{
  "uuid": "73422419372921",
  "displayName": "PT_Consistent_Scaling_VM_1",
  "className": "VirtualMachine",
  "priceIndex": 100.357,
  "state": "ACTIVE",
  "severity": "Normal",
  "costPrice": 0.0159137,
  "discoveredBy": {
    "uuid": "73422416392368",
    "displayName": "producttrust",
    "category": "Public Cloud",
    "type": "AWS",
    "readonly": false
  },
  ...
}
]
```

Using this result, you can either use each UUID found, or filter based on entities. For example, to iterate through a group and get the UUID of all VM entities:

```
foreach (var entity in groupApiResponse)
{
  if (entity["className"] == VirtualMachine)
  {
    Console.WriteLine(entity["uuid"])
  }
}
```

Creating a Static Group

Objective

To create a static group of entities.

A static group contains a fixed set of entities. This example creates a group of VMs, but you can create a group of any entity type.

The script will get the unique IDs of member entities by their display names, and add them to a list that it then uses to display the group members.

The script also sets up the group type and entity type when it creates the payload data. It then uses the API to create the group, and verify that the group contains the entities you specified.

Prerequisites

In order to create a static group, you must have the following information:

- The display names of the members in the group
- The entity type you will use for this group
- The IP address and login credentials for a Workload Optimization Manager instance

Related Endpoints

This recipe uses the following endpoints:

- [Groups \(on page 87\)](#)
It uses the `POST /groups` request to create the group, and the `GET /groups/{group_uuid}` request to verify the group membership.
- [Search \(on page 203\)](#)
It uses the `GET /search` request to obtain the UUIDs of the group members from the display names.

Script Setup

To set up the script, provide values from your environment for the following:

- `ip`
The IP address of your Workload Optimization Manager instance.
- `username`
The username for the account Workload Optimization Manager will use to access the API.
- `password`
The password for the account Workload Optimization Manager will use to access the API.
- `names_list`
A list of display names for the entities you want to add to the group. Note that the entities must all be of the same type. If entities of more than one type are provided, group creation will fail.
- `group_name`
The display name for the group. This name will appear in the user interface.
- `entity_type`
The entity type for the group and its member entities. The script will use this in creating the Group input data, and also when executing a search for the entities' UUID.

NOTE:

Workload Optimization Manager does not support creation of groups with more than one entity type at this time.

Authentication

The first step of any script is to authenticate access to your Workload Optimization Manager instance, retrieve the authentication token and store it for use with subsequent calls. To authenticate, this script uses the values you set for `ip`, `username`, and `password`. For more detail, see the [Authentication Recipe \(on page 269\)](#).

API Request: `https://{ip}/vmturbo/rest/login`

UUID Retrieval

After it logs in, the script iterates through your list of entity names, passing each in turn to the `GET /search` request. It uses the returned `EntityApiDTO` to get the UUIDs for each matching entity.

The search response is an array of entity objects, and each entity object includes the entity's UUID. The script loops through the display names you provide in `names_list`, and executes a separate search request for each name. Each response should be an array of one item. The script adds the `uuid` of that item to the `group_members_uuids` list.

NOTE:

Another method to obtain the UUIDs is to execute a filtered `POST /search` request. This script uses repeated `GET /search` requests for simplicity.

Sample Request: GET https://10.10.10.10/api/v3/search?q=zrlinuxclone106&types=VirtualMachine&entityTypes=VirtualMachine

Sample Return:

```
[
  {
    "uuid": "74011863734144",
    "displayName": "zrlinuxclone106",
    "className": "VirtualMachine",
    "state": "ACTIVE",
    "severity": "Critical",
    "discoveredBy": {
      "uuid": "73935378522272",
      "displayName": "vsphere-dc23.eng.vmturbo.com",
      "category": "Hypervisor",
      "type": "vCenter",
      "readonly": false
    },
    "severityBreakdown": {
      "CRITICAL": 1
    },
    "providers": [
      {
        "uuid": "73935378875792",
        "displayName": "hp-esx108.eng.vmturbo.com",
        "className": "PhysicalMachine"
      },
      {
        "uuid": "73935378875736",
        "displayName": "QS2_GRID01:DC23DS1",
        "className": "Storage"
      },
      {
        "uuid": "73995333587472",
        "displayName": "Resources-hp-esx108.eng.vmturbo.com",
        "className": "VirtualDataCenter"
      }
    ],
    "environmentType": "ONPREM",
    "vendorIds": {
      "vsphere-dc23.eng.vmturbo.com": "vm-2844"
    }
  }
]
```

Constructing the Input DTO and Creating the Group

Once the script has built the list of UUIDs for the group members, it can build a `GroupApiDTO` to describe the group you want. The DTO needs values for the following properties:

- `isStatic`: true to create a static group
- `displayName`: The group name that you set for the `group_name` variable
- `memberUuidList`: The array of UUID strings that the script has created
- `criteriaList`: For a static group, pass an empty array
- `groupType`: The entity type for this group -- the value you set for the `entity_type` variable

Using the obtained UUIDs and the above information, the script will construct the input `GroupApiDTO` (on page 379). The script creates a Python dictionary, which it passes as the input body of the `POST /groups` request.

Example Input DTO:

```
{
  "isStatic": "true",
  "displayName": "TestGrp2",
  "memberUuidList": [
    "74011863734144",
    "73997881750336"
  ],
  "criteriaList": [
    ],
    "groupType": "VirtualMachine"
  }
}
```

Sample Request: POST <https://{ip}/api/v3/groups/>

The response to this request will be the GroupApiDTO for the created group.

Sample Response:

```
{
  "uuid": "285123335341792",
  "displayName": "TestGrp2",
  "className": "Group",
  "membersCount": 2,
  "entitiesCount": 2,
  "groupType": "VirtualMachine",
  "severity": "CRITICAL",
  "environmentType": "ONPREM",
  "isStatic": true,
  "logicalOperator": "AND",
  "memberUuidList": [
    "74011863734144",
    "73997881750336"
  ],
  ],
  "temporary": false,
  "activeEntitiesCount": 1,
  "cloudType": "UNKNOWN",
  "memberTypes": [
    "VirtualMachine"
  ],
  ],
  "entityTypes": [
    "VirtualMachine"
  ],
  ],
  "groupClassName": "GroupApiDTO"
}
```

Verification

To verify that the group was created successfully, the script uses the returned UUID to get the group data via the `/groups` endpoint. If the request gets the group, the returned DTO should be identical to the response from the request to create the group.

If the group does not exist for the given UUID, the API returns the request status 404, with the message, `Group not found: <Passed_UUID>`. This indicates that the script failed to create the group.

Sample Response: `https://{ip}/api/v3/groups/{group_uuid}`

You can choose to only use a subset of the provided response. For example, this script prints the `displayName` and `UUID` for each group member.

Sample Script Response:

```
Group Members:
```

```
Display name: boao.min-spare
OID: 73997881750336
Display name: zrlinuxclone106
OID: 74011863734144
```

Script Example

```
import json
import requests
import urllib3
import re

import sys
sys.path.append('../login') #This makes login visible...
import login

#
# Make sure you have the correct count of arguments.
#
if len(sys.argv) != 7:
    print("Incorrect arguments list.")
    sys.exit()

#
# Get the args into well named vars, and also authenticate.
#
ip = sys.argv[1]
groupName = sys.argv[4]
entityType = sys.argv[5]
entsListByName = sys.argv[6].split(',')

token = login.get_cookie(ip, sys.argv[2], sys.argv[3])
authHeader = {'cookie': token}

#
# Get UUIDs for entities in entsListByName
#
memberIds = []
for name in entsListByName:
    response = requests.get(
        f'https://{ip}/api/v3/search?q={name}&types={entityType}&entity_types={entityType}&query_type=EXACT',
        headers=authHeader, verify=False)
    if response.status_code == 200:
        response_json = json.loads(response.text)
        memberIds.append(response_json[0]['uuid'])
    if response.status_code != 200:
        print(f'Search Request Status for {name} is {response.status_code}.')
```

```

# Assemble the payload object to create the group.
#
group_input_dto = {}
group_input_dto['isStatic'] = 'true'
group_input_dto['displayName'] = groupName
group_input_dto['memberUuidList'] = memberIds
group_input_dto['criteriaList'] = []
group_input_dto['groupType'] = entityType

#
# Create the group
#
response = requests.post(f'https://{ip}/api/v3/groups', json=group_input_dto, headers=authHeader,
                        verify=False, stream=True)

if response.status_code != 200:
    print(f'Create Group failed. StatusCode: {response.status_code}\n{response.text}')
    sys.exit()

groupResponse_json = json.loads(response.text)
groupId = groupResponse_json['uuid']

#
# Inspect the group
#
groupCheck_response = requests.get(f'https://{ip}/api/v3/groups/{groupId}', headers=authHeader,
                                   verify=False)
groupCheck_json = json.loads(groupCheck_response.text)

if groupCheck_json['uuid']:
    verifiedId = groupCheck_json['uuid']
    groupName = groupCheck_json['displayName']
    print(f'Group \"{groupName}\" successfully created with a UUID of: {verifiedId}')
else:
    print('Error in group creation, no UUID found.')
    sys.exit()

# Get a list of Group members
response = requests.get(
    f'https://{ip}/api/v3/groups/{groupId}/entities', headers=authHeader, verify=False)
if response.status_code != 200:
    print(f'Could not get group members. Status is {response.status_code}.')
    sys.exit()

groupMembers_json = json.loads(response.text)

# Print a list of group members
print('\nGroup Members:')
for item in groupMembers_json:
    print('Display name: ' + item['displayName'])
    print('OID: ' + item['uuid'])
    
```

Creating a Dynamic Group

Objective

To create a dynamic group of entities.

A dynamic group contains a set of entities discovered by filter criteria. In this case, the script will create a group of all virtual machines which reside on a specific host. As virtual machines are added and removed from the host, the membership of this group will reflect those changes.

The script will use the `/search` endpoint to get the unique ID of the host using its display name, and then retrieve a list of expected virtual machines to verify against. The script then creates the criteria list and inserts that value into the rest of the payload data before creating the group and verifying that the membership is as expected.

Prerequisites

In order to create a dynamic group, you must have the following information:

- The display name of the host
- The entity type you will use for this group
- The IP address and login credentials for a Workload Optimization Manager instance

Related Endpoints

This recipe uses information from the following endpoints:

- [Groups \(on page 87\)](#)

NOTE:

All possible criterion values can be found in the [Groups Endpoint Tips \(on page 111\)](#).

- [Search \(on page 203\)](#)

Script Setup

To set up the script, provide values from your environment for the following:

- `ip`
The IP of your Workload Optimization Manager instance.
- `username`
The username for the account Workload Optimization Manager will use to access the API.
- `password`
The password for the account Workload Optimization Manager will use to access the API.
- `host_name`
The display name of the host whose virtual machines will be added to the group.
- `group_name`
The display name for the group. This name will appear in the user interface.
- `entity_type`
The entity type for the member entities of the group. The script will use this in creating the Group input data, and also when verifying group membership.

NOTE:

Workload Optimization Manager does not support creation of groups with more than one entity type at this time.

Authentication

The first step of any script is to authenticate to your Workload Optimization Manager instance, retrieve the authentication token and store it for use with subsequent calls. To authenticate, this script uses the values you set for `ip`, `username`, and `password`. For more detail, see the [Authentication Recipe \(on page 269\)](#).

API Request: `https://{ip}/vmturbo/rest/login`

Get Expected Initial Membership

After it logs in, the displays a list of virtual machines that reside on the host. These will be the group members.

The script uses the `/search` endpoint and retrieves the `EntityApiDTO` for the host. Using the `consumers` parameter, you can see each entity that purchases resources from this host. The script lists the consumers with a `className` that matches the entity type.

Sample Request: `GET https://{ip}/api/v3/search?q={host_name}&types=PhysicalMachine'&detail_type=entity'`

Create the Filter Criterion

To create a dynamic group, you pass filter criteria to identify matching entities. You pass these criteria as an array. For this script, we pass a single criterion in the array.

Example `criteria_list`:

```
[
  {
    "expType": "RREQ",
    "expVal": "host_name",
    "filterType": "vmsByPMName",
    "caseSensitive": "false"
  }
]
```

Construct the input DTO and Create the Group

The script will take the `criterion` parameter and use it to construct the [GroupApiDTO \(on page 379\)](#), with the following parameters:

- `isStatic`
When true, the created group is static. The script sets this parameter to `false`.
- `displayName`
The display name for the group. This name will appear in the user interface. The script sets this parameter
- `memberUuidList`
For a dynamic group, pass an empty array.
- `criteriaList`
The filtering criteria used to determine group membership. The script sets this parameter equal to the `criteria_list` variable.
- `groupType`
The entity type of the group members. The script sets this parameter equal to the `group_entity_type` variable.

API Request: `POST https://{ip}/api/v3/groups/`

The response to this request will be the `GroupApiDTO` for the created group.

Sample Response:

```
{
```

```

"uuid": "285126581114848",
"displayName": "TestGrp2",
"className": "Group",
"membersCount": 3,
"entitiesCount": 3,
"groupType": "VirtualMachine",
"severity": "CRITICAL",
"environmentType": "ONPREM",
"isStatic": false,
"logicalOperator": "AND",
"criteriaList": [
  {
    "expVal": "hp-esx119.eng.vmturbo.com",
    "expType": "RXEQ",
    "filterType": "vmsByPMName",
    "caseSensitive": false,
    "entityType": null,
    "singleLine": false
  }
],
"memberUuidList": [
  "73943582577376",
  "73943582577568",
  "73943582577744"
],
"temporary": false,
"activeEntitiesCount": 2,
"cloudType": "UNKNOWN",
"memberTypes": [
  "VirtualMachine"
],
"entityTypes": [
  "VirtualMachine"
],
"groupClassName": "GroupApiDTO"
}

```

Verify the Group

To verify that the group was created successfully, the script uses the returned UUID to get the group data via the `/groups` endpoint. If the request gets the group, the membership of the group should match what was printed to the console in the *Get Expected Initial Membership* portion of the script, assuming that no virtual machines have been added or removed since that time.

If the group does not exist for the given UUID, the API returns the request status 404, with the message, `Group not found: <Passed_UUID>`. This indicates that the script failed to create the group.

API Request: `https://{ip}/api/v3/groups/{group_uuid}`

You might choose to only use a subset of the provided response. For example, this script prints the `displayName` and `UUID` for each group member.

Sample Script Response:

Group Members:

```

Display name: DC26-P02-03
OID: 73943582577376
Display name: DC26-P02-02
OID: 73943582577568
Display name: DC26-P02-01

```

```
OID: 73943582577744
```

Script Example

```
#
# Commandline args: platformIP, username, pwd, group_name, entity_type, host_name
# EXAMPLE: ./entity_changes.py 10.10.123.456 MyUser MyPwd MyTestGroup VirtualMachine MyHost
#
import json
import requests
import urllib3
import re
```

```
import sys
sys.path.append('../login') #This makes login visible...
import login
```

```
#
# Make sure you have the correct count of arguments.
#
if len(sys.argv) != 7:
    print("Incorrect arguments list.")
    sys.exit()
```

```
#
# Get the args into well named vars, and also authenticate.
#
ip = sys.argv[1]
group_name = sys.argv[4]
entity_type = sys.argv[5]
host_name = sys.argv[6]
```

```
token = login.get_cookie(ip, sys.argv[2], sys.argv[3])
authHeader = {'cookie': token}
```

```
#
# Get Expected Initial Membership
#
response = requests.get(
    f'https://{ip}/api/v3/search?q={host_name}&types=PhysicalMachine'
    f'&detail_type=entity',
    headers=authHeader, verify=False)
get_vms_response_json = json.loads(response.text)
```

```
print(f'CONSUMERS: {get_vms_response_json[0]["consumers"]}')
print(f'The {entity_type} members of this dynamic group will be:')
for entity in get_vms_response_json[0]['consumers']:
    if entity['className'] == entity_type:
        print(entity)
```

```
#
# Create the filter criterion
#
criterion = {}
criterion['expType'] = "RXEQ"
criterion['expVal'] = host_name
criterion['filterType'] = "vmsByPMName"
criterion['caseSensitive'] = "false"
```

```
#
# Construct the Input DTO and Create the Group
#
group_input_dto = {}
group_input_dto['isStatic'] = 'false'
group_input_dto['displayName'] = group_name
group_input_dto['memberUuidList'] = []
group_input_dto['criteriaList'] = [criterion]
group_input_dto['groupType'] = entity_type

response = requests.post(
    f'https://{ip}/api/v3/groups', headers=authHeader, json=group_input_dto, verify=False, stream=True)
group_creation_response_json = json.loads(response.text)
group_uuid = group_creation_response_json['uuid']

#
# Verify the group
#
response = requests.get(
    f'https://{ip}/api/v3/groups/{group_uuid}/entities', headers=authHeader, verify=False)
group_members_response_json = json.loads(response.text)

# Print a list of group members
print('\nGROUP MEMBERS:')
for item in group_members_response_json:
    print('Display name: ' + item['displayName'])
    print('OID: ' + item['uuid'])
```




Appendix: Internal Workload Optimization Manager API Requests

Internal Requests are requests that are used internally by Workload Optimization Manager, but are not intended for customer use. The structure data returned by these requests is subject to change without notice.

The following requests have been marked as Internal Only:

Endpoint	Request
/entities	DELETE /entities/loggingEntities PUT /entities/{entity_Uuids}/loggingEntities GET /entities/{entity_Uuid}/aspects/{aspect_name}/actions POST /entities/{entity_Uuid}/aspects/{aspect_name}/actions GET /entities/{entity_Uuid}/aspects/{aspect_name}/stats POST /entities/{entity_Uuid}/aspects/{aspect_name}/stats POST /entities/{entity_Uuid}/tags DELETE /entities/{entity_Uuid}/tags DELETE /entities/{entity_Uuid}/tags/{tag_key}
/groups	GET /groups/{group_Uuid}/aspects/{aspect_name}/actions POST /groups/{group_Uuid}/aspects/{aspect_name}/actions GET /groups/{group_Uuid}/aspects/{aspect_name}/stats POST /groups/{group_Uuid}/aspects/{aspect_name}/stats POST /groups/{group_Uuid}/notifications/stats POST /groups/{group_Uuid}/tags DELETE /groups/{group_Uuid}/tags DELETE /groups/{group_Uuid}/tags/{tag_key}
/markets	PUT /markets/{market_Uuid}/policies/{policy_Uuid}
/reports	POST /reports/templates

Endpoint	Request
/scenarios	PUT /scenarios/{scenario_Uuid} PUT /scenarios/{scenario_Uuid}/entities/{entity_Uuid} DELETE /scenarios/{scenario_Uuid}/entities/{entity_Uuid} PUT /scenarios/{scenario_Uuid}/groups/{group_Uuid} PUT /scenarios/{scenario_Uuid}/policies DELETE /scenarios/{scenario_Uuid}/policies/{policy_Uuid} PUT /scenarios/{scenario_Uuid}/templates/{template_name}
/widgetsets	The entire /widgetsets endpoint is Internal Only.



Appendix: Scenario Peak-of-Peak Full Scenario Input DTO

For reference purposes, see below for a complete input DTO for a Peak of Peaks plan.

```
{
  "uuid": "XXXXDemo",
  "displayName": "XXXXDemo",
  "owners": [
    {
      "uuid": "_4T_7kwY-Ed-WUKbEYSVIDw",
      "username": "administrator",
      "showSharedUserSC": false
    }
  ],
  "type": "PEAKOFPEAKS",
  "scope": [
    {
      "uuid": "_PE0v-YEUEee_hYfzgV9uYg",
      "displayName": "All On-prem Hosts",
      "className": "All On-prem Hosts"
    }
  ],
  "topologyChanges": {
  },
  "loadChanges": {
    "maxUtilizationList": [
      {
        "maxPercentage": 70,
        "projectionDay": 0,
        "target": {
          "displayName": "All On-prem Hosts",
          "className": "Group",
          "uuid": "_PE0v-YEUEee_hYfzgV9uYg"
        }
      }
    ]
  },
  "overlayStatsList": [
    {
      "uuid": "4223ae0c-c99b-f6ca-c1ef-3f367bdf5528",
      "displayName": "centos_imp_2",
      "className": "VirtualMachine",
    }
  ]
}
```

```

"environmentType": "ONPREM",
"stats": [
  {
    "displayName": "centos_imp_2",
    "date": "2019-02-01T00:00:00-05:00",
    "statistics": [
      {
        "displayName": "centos_imp_2",
        "date": "2019-03-14T15:12:36-04:00",
        "statistics": [
          {
            "name": "priceIndex",
            "values": {
              "max": 20000,
              "min": 20000,
              "avg": 20000,
              "total": 20000
            },
            "value": 20000
          },
          {
            "name": "CPUProvisioned",
            "capacity": {
              "max": 104000,
              "min": 104000,
              "avg": 104000,
              "total": 104000
            },
            "filters": [
              {
                "type": "relation",
                "value": "bought"
              }
            ],
            "relatedEntity": {
              "uuid": "Virtual_ESX_4238255f-86cc-4cb9-0f47-11ff689f0b22",
              "displayName": "hp-esx4.dev.mycorp.com",
              "className": "PhysicalMachine"
            },
            "units": "MHz",
            "values": {
              "max": 5200,
              "min": 5200,
              "avg": 5200,
              "total": 5200
            },
            "value": 5200
          },
          {
            "name": "Mem",
            "capacity": {
              "max": 16776692,
              "min": 16776692,
              "avg": 16776692,
              "total": 16776692
            },
            "filters": [
              {
                "type": "relation",
                "value": "bought"
              }
            ],
            "relatedEntity": {
              "uuid": "Virtual_ESX_4238255f-86cc-4cb9-0f47-11ff689f0b22",
              "displayName": "hp-esx4.dev.mycorp.com",

```

```

    "className": "PhysicalMachine"
  },
  "units": "KB",
  "values": {
    "max": 3555836,
    "min": 3554799.8,
    "avg": 3554799.8,
    "total": 3554799.8
  },
  "value": 3554799.8
},
{
  "name": "MemProvisioned",
  "capacity": {
    "max": 167766912,
    "min": 167766912,
    "avg": 167766912,
    "total": 167766912
  },
  "filters": [
    {
      "type": "relation",
      "value": "bought"
    }
  ],
  "relatedEntity": {
    "uuid": "Virtual_ESX_4238255f-86cc-4cb9-0f47-11ff689f0b22",
    "displayName": "hp-esx4.dev.mycorp.com",
    "className": "PhysicalMachine"
  },
  "units": "KB",
  "values": {
    "max": 4194304,
    "min": 4194304,
    "avg": 4194304,
    "total": 4194304
  },
  "value": 4194304
},
{
  "name": "StorageAmount",
  "capacity": {
    "max": 3301375,
    "min": 3301375,
    "avg": 3301375,
    "total": 3301375
  },
  "filters": [
    {
      "type": "relation",
      "value": "bought"
    }
  ],
  "relatedEntity": {
    "uuid": "6F76b47e-e6f0a3fe",
    "displayName": "QSGRID01:ESXDC1DS1",
    "className": "Storage"
  },
  "units": "MB",
  "values": {
    "max": 725.32,
    "min": 725.32,
    "avg": 725.32,
    "total": 725.32
  },
}

```

```

    "value":725.32
  },
  {
    "name": "NetThroughput",
    "capacity": {
      "max": 3072000,
      "min": 3072000,
      "avg": 3072000,
      "total": 3072000
    },
    "filters": [
      {
        "type": "relation",
        "value": "bought"
      }
    ],
    "relatedEntity": {
      "uuid": "Virtual_ESX_4238255f-86cc-4cb9-0f47-11ff689f0b22",
      "displayName": "hp-esx4.dev.mycorp.com",
      "className": "PhysicalMachine"
    },
    "units": "Kbit/sec",
    "values": {
      "max": 0,
      "min": 0,
      "avg": 0,
      "total": 0
    },
    "value": 0
  },
  {
    "name": "MemAllocation",
    "capacity": {
      "max": 52503552,
      "min": 52503552,
      "avg": 52503552,
      "total": 52503552
    },
    "filters": [
      {
        "type": "key",
        "value": "VirtualDataCenter::2332ba0f9dc14c07f11adb38e12df43c4bc8ca56"
      },
      {
        "type": "relation",
        "value": "bought"
      }
    ],
    "relatedEntity": {
      "uuid": "2332ba0f9dc14c07f11adb38e12df43c4bc8ca56",
      "displayName": "olga_do_not_touch_1",
      "className": "VirtualDataCenter"
    },
    "units": "KB",
    "values": {
      "max": 3555836,
      "min": 3554799.8,
      "avg": 3554799.8,
      "total": 3554799.8
    },
    "value": 3554799.8
  },
  {
    "name": "VCPU",
    "capacity": {

```

```

    "max":5200,
    "min":5200,
    "avg":5200,
    "total":5200
  },
  "filters":[
    {
      "type":"relation",
      "value":"sold"
    }
  ],
  "units":"MHz",
  "values":{
    "max":5214,
    "min":5201.9,
    "avg":5201.9,
    "total":5201.9
  },
  "value":5201.9
},
{
  "name":"Ballooning",
  "capacity":{
    "max":16776692,
    "min":16776692,
    "avg":16776692,
    "total":16776692
  },
  "filters":[
    {
      "type":"relation",
      "value":"bought"
    }
  ],
  "relatedEntity":{
    "uuid":"Virtual_ESX_4238255f-86cc-4cb9-0f47-11ff689f0b22",
    "displayName":"hp-esx4.dev.mycorp.com",
    "className":"PhysicalMachine"
  },
  "units":"KB",
  "values":{
    "max":0,
    "min":0,
    "avg":0,
    "total":0
  },
  "value":0
},
{
  "name":"StorageAccess",
  "capacity":{
    "max":5000,
    "min":5000,
    "avg":5000,
    "total":5000
  },
  "filters":[
    {
      "type":"relation",
      "value":"bought"
    }
  ],
  "relatedEntity":{
    "uuid":"6f76b47e-e6f0a3fe",
    "displayName":"QSGRID01:ESXDC1DS1",

```

```

    "className": "Storage"
  },
  "units": "IOPS",
  "values": {
    "max": 0,
    "min": 0,
    "avg": 0,
    "total": 0
  },
  "value": 0
},
{
  "name": "CPUAllocation",
  "capacity": {
    "max": 31096,
    "min": 31096,
    "avg": 31096,
    "total": 31096
  },
  "filters": [
    {
      "type": "key",
      "value": "VirtualDataCenter::2332ba0f9dc14c07f11adb38e12df43c4bc8ca56"
    },
    {
      "type": "relation",
      "value": "bought"
    }
  ],
  "relatedEntity": {
    "uuid": "2332ba0f9dc14c07f11adb38e12df43c4bc8ca56",
    "displayName": "olga_do_not_touch_1",
    "className": "VirtualDataCenter"
  },
  "units": "MHz",
  "values": {
    "max": 5214,
    "min": 5201.9,
    "avg": 5201.9,
    "total": 5201.9
  },
  "value": 5201.9
},
{
  "name": "IOThroughput",
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    "avg": 11264000,
    "total": 11264000
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  "reserved": {
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    "avg": 9011200,
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  "filters": [
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      "value": "bought"
    }
  ],
  "relatedEntity": {
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```



```

    "displayName": "hp-esx4.dev.mycorp.com",
    "className": "PhysicalMachine"
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  "units": "Kbit/sec",
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    "avg": 0,
    "total": 0
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  "value": 0
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  "name": "StorageLatency",
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    "avg": 100,
    "total": 100
  },
  "filters": [
    {
      "type": "relation",
      "value": "bought"
    }
  ],
  "relatedEntity": {
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    "displayName": "QSGRID01:ESXDC1DS1",
    "className": "Storage"
  },
  "units": "msec",
  "values": {
    "max": 0.5,
    "min": 0.5,
    "avg": 0.5,
    "total": 0.5
  },
  "value": 0.5
},
{
  "name": "VMem",
  "capacity": {
    "max": 4194304,
    "min": 4194304,
    "avg": 4194304,
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  },
  "filters": [
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      "value": "sold"
    }
  ],
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    "avg": 3233807,
    "total": 3233807
  },
  "value": 3233807
},
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  "name": "CPU",

```

```

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            "avg":10400,
            "total":10400
        },
        "filters":[
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                "value":"bought"
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        ],
        "relatedEntity":{
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            "className":"PhysicalMachine"
        },
        "units":"MHz",
        "values":{
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            "avg":5201.9,
            "total":5201.9
        },
        "value":5201.9
    },
    {
        "name":"VStorage",
        "capacity":{
            "max":2646,
            "min":1014,
            "avg":2238,
            "total":8952
        },
        "filters":[
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                "type":"key",
                "value":"VirtualMachine::08bb59f519b55c22415be8d623b5ccd5f578b85cc"
            },
            {
                "type":"relation",
                "value":"sold"
            }
        ],
        "units":"MB",
        "values":{
            "max":1016.14,
            "min":142.4,
            "avg":797.71,
            "total":3190.82
        },
        "value":797.71
    }
]
},
{
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    "className":"VirtualMachine",
    "environmentType":"ONPREM",
    "stats":[
        {
            "displayName":"centos_imp_3",

```

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"date": "2019-02-01T00:00:00-05:00",
"statistics": [
  {
    "displayName": "centos_imp_3",
    "date": "2019-03-14T15:12:36-04:00",
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        "name": "priceIndex",
        "values": {
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          "min": 20000,
          "avg": 20000,
          "total": 20000
        },
        "value": 20000
      },
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        "capacity": {
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          "avg": 104000,
          "total": 104000
        },
        "filters": [
          {
            "type": "relation",
            "value": "bought"
          }
        ],
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          "displayName": "hp-esx1.dev.mycorp.com",
          "className": "PhysicalMachine"
        },
        "units": "MHz",
        "values": {
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          "min": 5200,
          "avg": 5200,
          "total": 5200
        },
        "value": 5200
      },
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        "name": "Swapping",
        "capacity": {
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          "min": 40000000,
          "avg": 40000000,
          "total": 40000000
        },
        "filters": [
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            "type": "relation",
            "value": "bought"
          }
        ],
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          "displayName": "hp-esx1.dev.mycorp.com",
          "className": "PhysicalMachine"
        },
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        "values": {

```

```

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        "avg":0,
        "total":0
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        "avg":2147483650,
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            "type":"relation",
            "value":"bought"
        }
    ],
    "relatedEntity":{
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        "displayName":"hp-esx1.dev.mycorp.com",
        "className":"PhysicalMachine"
    },
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        "avg":1,
        "total":1
    },
    "value":1
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    "capacity":{
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        "min":16776692,
        "avg":16776692,
        "total":16776692
    },
    "filters":[
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    ],
    "relatedEntity":{
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        "className":"PhysicalMachine"
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        "avg":3062497,
        "total":3062497
    },
    "value":3062497
},
{
    "name": "MemProvisioned",
    "capacity":{

```

```

    "max":167766912,
    "min":167766912,
    "avg":167766912,
    "total":167766912
  },
  "filters":[
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  ],
  "relatedEntity":{
    "uuid":"Virtual_ESX_4238a511-8593-4469-2751-46611e09b6a8",
    "displayName":"hp-esx1.dev.mycorp.com",
    "className":"PhysicalMachine"
  },
  "units":"KB",
  "values":{
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    "min":4194304,
    "avg":4194304,
    "total":4194304
  },
  "value":4194304
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  "name":"StorageAmount",
  "capacity":{
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    "min":3301375,
    "avg":3301375,
    "total":3301375
  },
  "filters":[
    {
      "type":"relation",
      "value":"bought"
    }
  ],
  "relatedEntity":{
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    "displayName":"QSGRID01:ESXDC1DS1",
    "className":"Storage"
  },
  "units":"MB",
  "values":{
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    "min":719,
    "avg":719,
    "total":719
  },
  "value":719
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  "name":"NetThroughput",
  "capacity":{
    "max":3072000,
    "min":3072000,
    "avg":3072000,
    "total":3072000
  },
  "filters":[
    {
      "type":"relation",
      "value":"bought"
    }
  ],

```

```

    }
  ],
  "relatedEntity":{
    "uuid":"Virtual_ESX_4238a511-8593-4469-2751-46611e09b6a8",
    "displayName":"hp-esx1.dev.mycorp.com",
    "className":"PhysicalMachine"
  },
  "units":"Kbit/sec",
  "values":{
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    "min":0,
    "avg":0,
    "total":0
  },
  "value":0
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  "capacity":{
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    "min":52503552,
    "avg":52503552,
    "total":52503552
  },
  "filters":[
    {
      "type":"key",
      "value":"VirtualDataCenter::2332ba0f9dc14c07f11adb38e12df43c4bc8ca56"
    },
    {
      "type":"relation",
      "value":"bought"
    }
  ],
  "relatedEntity":{
    "uuid":"2332ba0f9dc14c07f11adb38e12df43c4bc8ca56",
    "displayName":"olga_do_not_touch_1",
    "className":"VirtualDataCenter"
  },
  "units":"KB",
  "values":{
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    "avg":3062497,
    "total":3062497
  },
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    "avg":5200,
    "total":5200
  },
  "filters":[
    {
      "type":"relation",
      "value":"sold"
    }
  ],
  "units":"MHz",
  "values":{
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```

```

    "min":5194.67,
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    "total":5194.67
  },
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    "total":16776692
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      "type":"relation",
      "value":"bought"
    }
  ],
  "relatedEntity":{
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    "displayName":"hp-esx1.dev.mycorp.com",
    "className":"PhysicalMachine"
  },
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  "values":{
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    "min":0,
    "avg":0,
    "total":0
  },
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  "name":"StorageAccess",
  "capacity":{
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    "min":5000,
    "avg":5000,
    "total":5000
  },
  "filters":[
    {
      "type":"relation",
      "value":"bought"
    }
  ],
  "relatedEntity":{
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    "displayName":"QSGRID01:ESXDC1DS1",
    "className":"Storage"
  },
  "units":"IOPS",
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    "min":0,
    "avg":0,
    "total":0
  },
  "value":0
},
{
  "name":"CPUAllocation",
  "capacity":{

```

```

        "max":31096,
        "min":31096,
        "avg":31096,
        "total":31096
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            "value":"VirtualDataCenter::2332ba0f9dc14c07f11adb38e12df43c4bc8ca56"
        },
        {
            "type":"relation",
            "value":"bought"
        }
    ],
    "relatedEntity":{
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        "displayName":"olga_do_not_touch_1",
        "className":"VirtualDataCenter"
    },
    "units":"MHz",
    "values":{
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        "min":5194.67,
        "avg":5194.67,
        "total":5194.67
    },
    "value":5194.67
},
{
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    "capacity":{
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        "min":11264000,
        "avg":11264000,
        "total":11264000
    },
    "reserved":{
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        "min":9011200,
        "avg":9011200,
        "total":9011200
    },
    "filters":[
        {
            "type":"relation",
            "value":"bought"
        }
    ],
    "relatedEntity":{
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        "displayName":"hp-esx1.dev.mycorp.com",
        "className":"PhysicalMachine"
    },
    "units":"Kbit/sec",
    "values":{
        "max":0,
        "min":0,
        "avg":0,
        "total":0
    },
    "value":0
},
{
    "name":"StorageLatency",

```



```

    "capacity":{
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        "type":"relation",
        "value":"bought"
      }
    ],
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      "displayName":"QSGRID01:ESXDC1DS1",
      "className":"Storage"
    },
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    "values":{
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      "min":0.33,
      "avg":0.33,
      "total":0.33
    },
    "value":0.33
  },
  {
    "name":"Q2VCPU",
    "capacity":{
      "max":20000,
      "min":20000,
      "avg":20000,
      "total":20000
    },
    "reserved":{
      "max":10000,
      "min":10000,
      "avg":10000,
      "total":10000
    },
    "filters":[
      {
        "type":"relation",
        "value":"bought"
      }
    ],
    "relatedEntity":{
      "uuid":"Virtual_ESX_4238a511-8593-4469-2751-46611e09b6a8",
      "displayName":"hp-esx1.dev.mycorp.com",
      "className":"PhysicalMachine"
    },
    "units":"msec",
    "values":{
      "max":11,
      "min":11,
      "avg":11,
      "total":11
    },
    "value":11
  },
  {
    "name":"VMem",
    "capacity":{
      "max":4194304,
      "min":4194304,

```

```

        "avg":4194304,
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    },
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        {
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            "value":"sold"
        }
    ],
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        "avg":2747267,
        "total":2747267
    },
    "value":2747267
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    "name":"CPU",
    "capacity":{
        "max":10400,
        "min":10400,
        "avg":10400,
        "total":10400
    },
    "filters":[
        {
            "type":"relation",
            "value":"bought"
        }
    ],
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        "displayName":"hp-esx1.dev.mycorp.com",
        "className":"PhysicalMachine"
    },
    "units":"MHz",
    "values":{
        "max":5203,
        "min":5194.67,
        "avg":5194.67,
        "total":5194.67
    },
    "value":5194.67
},
{
    "name":"VStorage",
    "capacity":{
        "max":2646,
        "min":1014,
        "avg":2238,
        "total":8952
    },
    "filters":[
        {
            "type":"key",
            "value":"VirtualMachine::199bb3ec4f8da89f01c126a6b3df4c1321c4b07d"
        },
        {
            "type":"relation",
            "value":"sold"
        }
    ],
    "units":"MB",

```

```
        "values":{
          "max":1016.01,
          "min":142.4,
          "avg":797.61,
          "total":3190.42
        },
        "value":797.61
      ]
    }
  ]
},
"timebasedTopologyChanges":{
}
}
```



Appendix: Reference Tables

Reference Tables Overview

This section of the Appendix will contain reference tables for common API parameters, separated by endpoint. Note that filter tables may contain other reference tables for completeness.

Action Reference Tables

Action Mode:

- **DISABLED:**
Do not recommend or perform the action. When you disable an action, the user interface will no longer display actions of that type.
- **RECOMMENDED:**
Recommend the action so a user can execute it via the given hypervisor or by other external means
- **MANUAL:**
Recommend the action, and provide the option to execute that action through the Workload Optimization Manager user interface or an /actions API request.
- **AUTOMATED:**
You have directed Workload Optimization Manager to execute the action automatically.
- **COLLECTION (UNUSED):**
Legacy action mode, no longer used.

Action State:

- **DISABLED:**
An action whose policy has been disabled.
- **RECOMMEND:**
An action that cannot be automated due to policy settings or must be executed outside the system, such as the purchase of hardware.
- **PENDING_ACCEPT:**
When the action mode is set to manual, a recommended action that has not been accepted or cleared.
- **ACCEPTED:**
An action that has been accepted, but is not yet in progress.
- **IN_PROGRESS:**
An action that is being executed.

- **SUCCEEDED:**
An action that was accepted and completed successfully.
- **FAILED:**
An action that was accepted and did not complete successfully.
- **REJECTED:**
When the action mode is set to manual, an action that has been rejected by the user.
- **CLEARED:**
When the action mode is set to manual, an action that is no longer recommended by the market.
- **ACCOUNTING:**
For cloud entities, an action to resize in order to use a different instance template.
- **QUEUED:**
When more than 10 actions are to be executed for a single target, Workload Optimization Manager will place the 11th and all subsequent actions into a QUEUED state, and they will execute as the previous actions complete.

Action Type:

- **START:**
Start an entity, and add it to the Workload Optimization Manager market.
- **MOVE:**
Move an entity from one provider to another. For example, moving a VM between hosts, or a datastore between disk arrays.
- **SUSPEND:**
Suspend the entity to exclude its capacity from your environment. Suspend does not remove the entity from your environment, but the market does not include the entity in its analysis. Based on market conditions, analysis can recommend restarting suspended entities, which includes them in market analysis once again.
- **ADD PROVIDER:**
This is equivalent to the **START** action, but for storage entities.
- **CHANGE:**
Move a virtual machine's storage between datastores.
- **PROVISION:**
Add capacity to your environment.
- **RECONFIGURE:**
Analysis recommends this when a VM is not able to correct a misconfiguration via another type of action. For example, analysis can recommend a **RECONFIGURE** action when a placement policy requires a VM to move to a host on a particular cluster, but cross-cluster moves are not permitted.
- **DELETE:**
This is equivalent to the **SUSPEND** action, but for storage entities.
- **RESERVE_ON_PM:**
When using the reservation functionality, this is the action to reserve the resources of a VM on a particular host.
- **RESERVE_ON_DS:**
When using the reservation functionality, this is the action to reserve the resources of a VM on a particular datastore.
- **RESIZE_FOR_EFFICIENCY:**
A resize that reduces the capacity of a commodity, such as vCPU, or vMEM.
- **RESIZE_FOR_PERFORMANCE:**
A resize that increases the capacity of a commodity, such as vCPU, or vMEM.

Action Filter Criteria:

Criteria	Description
actionModelList	<ul style="list-style-type: none"> ▪ DISABLED: Do not recommend or perform the action. When you disable an action, the user interface will no longer display actions of that type. ▪ RECOMMENDED: Recommend the action so a user can execute it via the given hypervisor or by other external means ▪ MANUAL: Recommend the action, and provide the option to execute that action through the Workload Optimization Manager user interface or an /actions API request. ▪ AUTOMATED: You have directed Workload Optimization Manager to execute the action automatically. ▪ COLLECTION (UNUSED): Legacy action mode, no longer used.
actionStateList	<ul style="list-style-type: none"> ▪ DISABLED: An action whose policy has been disabled. ▪ RECOMMEND: An action that cannot be automated due to policy settings or must be executed outside the system, such as the purchase of hardware. ▪ PENDING_ACCEPT: When the action mode is set to manual, a recommended action that has not been accepted or cleared. ▪ ACCEPTED: An action that has been accepted, but is not yet in progress. ▪ IN_PROGRESS: An action that is being executed. ▪ SUCCEEDED: An action that was accepted and completed successfully. ▪ FAILED: An action that was accepted and did not complete successfully. ▪ REJECTED: When the action mode is set to manual, an action that has been rejected by the user. ▪ CLEARED: When the action mode is set to manual, an action that is no longer recommended by the market. ▪ ACCOUNTING: For cloud entities, an action to resize in order to use a different instance template.

Criteria	Description
	<ul style="list-style-type: none"> ▪ QUEUED: When more than 10 actions are to be executed for a single target, Workload Optimization Manager will place the 11th and all subsequent actions into a QUEUED state, and they will execute as the previous actions complete.
actionTypeList	<ul style="list-style-type: none"> ▪ START: Start an entity, and add it to the Workload Optimization Manager market. ▪ MOVE: Move an entity from one provider to another. For example, moving a VM between hosts, or a datastore between disk arrays. ▪ SUSPEND: Suspend the entity to exclude its capacity from your environment. Suspend does not remove the entity from your environment, but the market does not include the entity in its analysis. Based on market conditions, analysis can recommend restarting suspended entities, which includes them in market analysis once again. ▪ ADD PROVIDER: This is equivalent to the START action, but for storage entities. ▪ CHANGE: Move a virtual machine's storage between datastores. ▪ PROVISION: Add capacity to your environment. ▪ RECONFIGURE: Analysis recommends this when a VM is not able to correct a misconfiguration via another type of action. For example, analysis can recommend a RECONFIGURE action when a placement policy requires a VM to move to a host on a particular cluster, but cross-cluster moves are not permitted. ▪ DELETE: This is equivalent to the SUSPEND action, but for storage entities. ▪ RESERVE_ON_PM: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular host. ▪ RESERVE_ON_DS: When using the reservation functionality, this is the action to reserve the resources of a VM on a particular datastore. ▪ RESIZE_FOR_EFFICIENCY: A resize that reduces the capacity of a commodity, such as vCPU, or vMEM. ▪ RESIZE_FOR_PERFORMANCE: A resize that increases the capacity of a commodity, such as vCPU, or vMEM.
cleared	<p>Default: false.</p> <p>When true, actions that were removed from the action list before being executed will be returned.</p>
costType	<ul style="list-style-type: none"> ▪ Saving An action that will decrease cloud spending.

Criteria	Description
	<ul style="list-style-type: none"> Investment An action that will increase cloud spending.
cumulative	<p>Default: false.</p> <p>When true, shows the savings for each action in a scope as a cumulative total, rather than showing the savings for individual actions.</p>
environmentType	<ul style="list-style-type: none"> ONPREM: Returns only actions related to entities that are part of your on-premises environment. CLOUD: Returns only actions related to entities that are part of your cloud environment.
groupBy	You may group the actions returned by the following criteria: [actionModes, actionStates, actionTypes, risk, riskSeverity, riskSubCategory]
hasReservedInstance	<p>Default: false.</p> <p>When true, only actions that are related to reserved instances will be returned.</p>
relatedEntityTypes	<p>Returns only actions related to entities of these types within the scope. For example, if your scope is a virtual datacenter and you specify VirtualMachine as a related entity type, the request will include only those actions related to VMs in the specified virtual datacenter.</p> <p>Choose from the following entity types: [Datacenter, PhysicalMachine, VirtualMachine, Storage, Application, Chassis, DiskArray, IOModule, StorageControl, Switch, VirtualDataCenter, VPod, DPod, Container, Database, DatabaseServerContainer, LogicalPool]</p>
riskSeverityList	Returns only actions of the given severities: [Unknown, Normal, Minor, Major, Critical]
riskSubCategoryList	returns only actions of the given subcategories: [Performance Assurance, Efficiency Improvement, Prevention, Compliance]

Entity Reference Tables

Entity State:

- ACTIVE:
Entity is actively consuming resources.
- EVACUATED:
Entity is ready to suspend and will not participate in the market, but will not generate a SUSPEND action.

NOTE: This state replaces the SUSPEND state, and requires additional configuration to enable. Workload Optimization Manager does not recommend enabling this state.

- FAILOVER:
This entity is reserved for failover and will not participate in the market.

- **IDLE:**
Entity is powered off and not actively consuming market resources.
- **LAUNCH:**
Entity is starting.
- **MAINTENANCE:**
Entity is in maintenance mode.
- **NOT_MONITORED:**
Entity is not currently monitored by Workload Optimization Manager.
- **QUEUED:**
Entity is in the process of changing from one state to another.

NOTE: This state is internal to Workload Optimization Manager and will not appear in the UI, but may appear in an API response if the call is executed at the precise moment the entity is changing state.

- **RESOURCE_ALLOCATION:**
Cloud entity is being created.
- **RESOURCE_RELEASE:**
Cloud Entity is being deleted.
- **SUSPEND:**
Entity is suspended or the guest OS is in sleep, standby, or suspended state. The entity is not removed from the environment, but will not be used in market decisions. Based on market conditions, suspended entities can be started, re-adding them to the market.
- **SUSPEND_PENDING:**
Entity is making preparations to suspend, or is the next entity of its type to suspend.
- **TERMINATE_PENDING:**
Entity is in the process of being deleted.
- **UNKNOWN:**
Workload Optimization Manager is unable to obtain the current state of the entity.

This occurs when the entity is reported to the hypervisor as having a state of `DISCONNECTED`, `ORPHANED`, or `INVALID`.

Entity Type:

- `APPLICATION`
- `APPLICATION_SERVER`
- `BUSINESS_ACCOUNT`
- `BUSINESS_UNIT`
- `CHASSIS`
- `CLOUD_SERVICE`
- `CONTAINER`
- `CONTAINER_POD`
- `DATABASE`
- `DATABASE_SERVER`
- `DATACENTER`
- `DISK_ARRAY`
- `DPOD`

- IO_MODULE
- LOAD_BALANCER
- LOGICAL_POOL
- NETWORK
- PHYSICAL_MACHINE
- STORAGE
- STORAGE_CONTROLLER
- SWITCH
- VIRTUAL_APPLICATION
- VIRTUAL_DATACENTER
- VIRTUAL_MACHINE
- VPOD



Appendix: DTO Index

Data transfer objects (DTOs) are used to encapsulate and send data to the Workload Optimization Manager API. The following DTOs are used by Workload Optimization Manager:

NOTE:

The DTO Index is a work in progress, and included in a draft stage for reference. The information contained in the Index is accurate, but may not be complete.

ActionApiDTO

Description

Model to describe an Action

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

actionImpactID

- **type:** integer
- **format:** int64
- **description:** The ID for the action, which will persist across restarts

marketID

- **type:** integer
- **format:** int64
- **description:** The ID of the market for which the action was generated

createTime

- **type:** string
- **description:** Creation time

updateTime

- **type:** string
- **description:** Update time

clearTime

- **type:** string
- **description:** Execution time

actionType

- **type:** string
- **description:** Type
- **enum:** ['START', 'MOVE', 'SCALE', 'ALLOCATE', 'SUSPEND', 'PROVISION', 'RECONFIGURE', 'RESIZE', 'DELETE', 'RIGHT_SIZE', 'BUY_RI']

actionState

- **type:** string
- **description:** Action State
- **enum:** ['PENDING_ACCEPT', 'ACCEPTED', 'REJECTED', 'PRE_IN_PROGRESS', 'POST_IN_PROGRESS', 'IN_PROGRESS', 'SUCCEEDED', 'FAILED', 'RECOMMENDED', 'DISABLED', 'QUEUED', 'CLEARED', 'ACCOUNTING', 'READY', 'FAILING']

actionMode

- **type:** string
- **description:** Action Mode
- **enum:** ['DISABLED', 'RECOMMEND', 'EXTERNAL_APPROVAL', 'MANUAL', 'AUTOMATIC', 'COLLECTION']

userName

- **type:** string
- **description:** Username of the user that accepted the action [DEPRECATED - Use: userInfo.userName or scheduleInfo.scheduleName in executionStatus.executorInfo]

details

- **type:** string
- **description:** A user-readable string describing the action

importance

- **type:** number
- **format:** float
- **description:** Numeric value that describes the priority of the action

target

- **description:** Target entity for an action. For example, the VM in a Resize Action, or the host for a VM move
- [ServiceEntityApiDTO \(on page 451\)](#)

currentEntity

- **description:** Current entity, such as the current host that a VM resides on for a VM move action
- [ServiceEntityApiDTO \(on page 451\)](#)

newEntity

- **description:** Destination entity, such as the host that a VM will move to for a VM move action
- [ServiceEntityApiDTO \(on page 451\)](#)

currentValue

- **type:** string
- **description:** Current value of a property, for example vMEM for a VM resize action

newValue

- **type:** string
- **description:** Calculated value to resize to, such as vMEM for a VM resize action

valueUnits

- **type:** string
- **description:** Units of the currentValue and newValue, such as KB for a VM vMEM resize action

resizeAttribute

- **type:** string
- **description:** The commodity attribute to be resized
- **enum:** ['CAPACITY', 'LIMIT', 'RESERVATION']

template

- **description:** Template used for the action, such as in a Cloud entity provision or move action
- [TemplateApiDTO \(on page 482\)](#)

risk

- **description:** Cause of the action
- [LogEntryApiDTO \(on page 393\)](#)

prerequisites

- **type:** array
- **description:** Description(s) of any prerequisite(s) that must occur before execution is possible. If this field is populated, the action would otherwise be executable but has been blocked by this prerequisite, and is displayed accordingly. If this field is not populated, no prerequisite has caused the action mode to be modified, and the action is displayed as normal.
- – **type:** string

prioritizedAutomationOpportunities

- **type:** array
- **description:** The Action is generated using the 'Prioritize Automation' setting, indicating that it is possible to have more savings if these opportunities are satisfied
- – **type:** string

stats

- **type:** array
- **description:** Statistics, such as Mem, vCPU, costPrice
- – [StatApiDTO \(on page 463\)](#)

progress

- **type:** integer
- **format:** int32
- **description:** Moved the 'progress' percentage value inside 'executionStatus', available when action detail level is 'EXECUTION' - [DEPRECATED - Use: executionStatus.progress]

currentLocation

- **description:** The region (DataCenter) where the current service entity is located, for cloud migration actions
- [DiscoveredEntityApiDTO \(on page 370\)](#)

newLocation

- **description:** The region, represented as a DataCenter entity, where the target service entity will be located for cloud migration actions
- [DiscoveredEntityApiDTO \(on page 370\)](#)

virtualDisks

- **type:** array
- **description:** Virtual Disk used for the action, for example in a storage move
- – [VirtualDiskApiDTO \(on page 494\)](#)

policy

- **description:** The policy associated with the action
- [PolicyApiDTO \(on page 412\)](#)

relatedSettingsPolicies

- **type:** array
- **description:** The related settings policies associated with the action
- – [BaseApiDTO \(on page 333\)](#)

actionSchedule

- **description:** The schedule associated with the action
- [ActionScheduleApiDTO \(on page 327\)](#)

compoundActions

- **type:** array
- **description:** Property for compound move actions
- – [ActionApiDTO \(on page 315\)](#)

reservedInstance

- **description:** The Reserved Instance associated with the action
- [ReservedInstanceApiDTO \(on page 433\)](#)

reservedInstancePlatform

- **type:** string
- **description:** The platform of the recommended RI if the action has a supersaving

externalActionName

- **type:** string
- **description:** The name under which this action appears in third-party software or external approval backend

externalActionUrl

- **type:** string
- **description:** URL to third-party software showing this action. Suitable for external action approval

executionStatus

- **description:** Status details of the execution of the Action. Include percentage progress, error messages and execution times.
- [ActionExecutionAuditApiDTO \(on page 322\)](#)

executionCharacteristics

- **description:** Characteristics of the execution of the Action. Include disruptiveness and reversibility.
- [ActionExecutionCharacteristicApiDTO \(on page 323\)](#)

relatedActionsCountByType

- **type:** object
- **description:** [BETA]: Map of related actions count by relationship type that have some relation to this Action
- **additionalProperties:** {'type': 'integer', 'format': 'int32'}

actionID

- **type:** integer
- **format:** int64
- **description:** Id of the action

ActionApiInputDTO

Description

Model to describe a Filter for Actions

Required Parameters

startTime

- **type:** string
- **description:** Start time of the period to filter, based on Actions Creation Time

Optional Parameters

actionRelationTypeFilter

- **type:** array
- **description:** Filters the main list of actions based on the types of relationships they have to other actions.
- - **type:** string
 - **enum:** ['NONE', 'BLOCKED_BY', 'BLOCKING', 'CAUSED_BY', 'CAUSING']

environmentType

- **type:** string
- **description:** Filter the actions by Environment Type
- **enum:** ['ONPREM', 'CLOUD']

costType

- **type:** string
- **description:** Filter the actions by cost Type
- **enum:** ['SAVING', 'INVESTMENT']

descriptionQuery

- **description:** This query will match the details field of the ActionApiDTO to return actions that match the specified expression.
- [QueryInputApiDTO \(on page 421\)](#)

riskQuery

- **description:** This query will match the risk description field of the ActionApiDTO to return actions that match the specified expression.
- [QueryInputApiDTO \(on page 421\)](#)

executionCharacteristics

- **description:** Characteristics of the execution of the action, including disruptiveness and reversibility.
- [ActionExecutionCharacteristicInputApiDTO \(on page 323\)](#)

savingsAmountRange

- **description:** This field will match the costPrice statistic field of the ActionApiDTO to return actions that have a costPrice amount between minValue and maxValue, inclusive
- [RangeInputApiDTO \(on page 423\)](#)

hasSchedule

- **type:** boolean
- **description:** If true, only actions that have an associated execution schedule will be returned.

hasPrerequisites

- **type:** boolean
- **description:** If true, only actions that have a prerequisite preventing execution of the action will be returned.

endTime

- **type:** string
- **description:** End time of the period to filter, based on Actions Creation Time

cleared

- **type:** boolean
- **description:** Filter by Actions Executed

cumulative

- **type:** boolean
- **description:** Show the action savings as cumulative values

hasReservedInstance

- **type:** boolean
- **description:** Filter the actions by whether having related reserved instance

excludeNotifications

- **type:** boolean
- **description:** Exclude the notifications from the result

limitEntities

- **type:** integer
- **format:** int32
- **description:** Limit number of entities in the result

detailLevel

- **type:** string
- **description:** Detail level of the Action, 'standard' is the default value
- **enum:** ['STANDARD', 'EXECUTION']

relatedEntityTypes

- **type:** array
- **example:** Selecting a VCD, and specifying ""related_entities": ["VirtualMachine"] will include the actions for any VM in the given VDC
- **description:** Related Entity Types to include from the supply chain for this entity
- – **type:** string

relatedCloudServiceProviderIds

- **type:** array
- **description:** Filter the actions by the related Cloud Service Providers.
- - **type:** string

groupBy

- **type:** array
- **description:** Fields used to Group the Stats
- - **type:** string

actionTypeList

- **type:** array
- - **type:** string
 - **enum:** ['NONE', 'START', 'MOVE', 'SCALE', 'ALLOCATE', 'SUSPEND', 'TERMINATE', 'SPAWN', 'ADD_PROVIDER', 'CHANGE', 'REMOVE_PROVIDER', 'PROVISION', 'RECONFIGURE', 'RESIZE', 'RESIZE_CAPACITY', 'WARN', 'RECONFIGURE_THRESHOLD', 'DELETE', 'RIGHT_SIZE', 'RESERVE_ON_PM', 'RESERVE_ON_DS', 'RESIZE_FOR_EFFICIENCY', 'RESIZE_FOR_PERFORMANCE', 'CROSS_TARGET_MOVE', 'MOVE_TOGETHER', 'ACTIVATE', 'DEACTIVATE', 'BUY_RI']

actionStateList

- **type:** array
- - **type:** string
 - **enum:** ['PENDING_ACCEPT', 'ACCEPTED', 'REJECTED', 'PRE_IN_PROGRESS', 'POST_IN_PROGRESS', 'IN_PROGRESS', 'SUCCEEDED', 'FAILED', 'RECOMMENDED', 'DISABLED', 'QUEUED', 'CLEARED', 'ACCOUNTING', 'READY', 'FAILING']

actionModeList

- **type:** array
- - **type:** string
 - **enum:** ['DISABLED', 'RECOMMEND', 'EXTERNAL_APPROVAL', 'MANUAL', 'AUTOMATIC', 'COLLECTION']

riskSeverityList

- **type:** array
- - **type:** string

riskSubCategoryList

- **type:** array
- - **type:** string

ActionDetailsApiDTO

Description

Parent class for action details. Implementing classes include: CloudResizeActionDetailsApiDTO, NoDetailsApiDTO, RIBuyActionDetailsApiDTO, CloudProvisionActionDetailsApiDTO, CloudSuspendActionDetailsApiDTO, OnPremResizeActionDetailsApiDTO and ReconfigureActionDetailsApiDTO.

Required Parameters

actionDetailType

- **type:** string

actionType

- **type:** string

ActionExecutionApiDTO

Description

Model to describe an Action Execution.

Required Parameters

acceptTime

- **type:** string
- **description:** Time when actions were accepted (in ISO8601 format - YYYY-MM-DDTHH:MM:SS)

actionIds

- **type:** array
- **description:** List of action IDs
- – **type:** string
- **maxItems:** 2147483647
- **minItems:** 1

id

- **type:** string
- **description:** Action Execution ID

skippedActions

- **type:** array
- **description:** List of actions that were skipped in execution
- – [SkippedActionApiDTO \(on page 462\)](#)

ActionExecutionAuditApiDTO

Description

Model to describe an Action Execution status.

Required Parameters

executionTime

- **type:** string
- **description:** Start of the execution time

executorInfo

- **description:** Information about the executor
- [ExecutorInfoApiDTO \(on page 376\)](#)

state

- **type:** string
- **description:** State of the execution
- **enum:** ['PENDING_ACCEPT', 'ACCEPTED', 'REJECTED', 'PRE_IN_PROGRESS', 'POST_IN_PROGRESS', 'IN_PROGRESS', 'SUCCEEDED', 'FAILED', 'RECOMMENDED', 'DISABLED', 'QUEUED', 'CLEARED', 'ACCOUNTING', 'READY', 'FAILING']

Optional Parameters

completionTime

- **type:** string
- **description:** End of the execution time

message

- **type:** string
- **description:** Status message, if the Action failed, it will contains the Error details

progress

- **type:** integer
- **format:** int32
- **description:** Action execution progress value, from 0 to 100

ActionExecutionCharacteristicApiDTO

Description

Model to describe action execution characteristics

Optional Parameters

disruptiveness

- **type:** string
- **description:** whether action is disruptive.
- **enum:** ['DISRUPTIVE', 'NON_DISRUPTIVE']

reversibility

- **type:** string
- **description:** whether action is reversible.
- **enum:** ['REVERSIBLE', 'IRREVERSIBLE']

ActionExecutionCharacteristicInputApiDTO

Description

Model to describe action execution characteristics

Optional Parameters

disruptiveness

- **type:** string
- **description:** whether action is disruptive.
- **enum:** ['DISRUPTIVE', 'NON_DISRUPTIVE']

reversibility

- **type:** string
- **description:** whether action is reversible.
- **enum:** ['REVERSIBLE', 'IRREVERSIBLE']

ActionExecutionInputApiDto

Description

Model to describe an Action Execution input.

Required Parameters

actionIds

- **type:** array
- **description:** List of action IDs
- – **type:** string
- **maxItems:** 2147483647
- **minItems:** 1

ActionResourceImpactStatApiInputDTO

Description

Model to describe an input for Action Resource Impact Stats

Required Parameters

actionResourceImpactStatList

- **type:** array
- **description:** List of Action Resource Impact Stat Inputs
- – [ActionResourceImpactStatInput \(on page 326\)](#)

Optional Parameters

actionRelationTypeFilter

- **type:** array
- **description:** Filters the main list of actions based on the types of relationships they have to other actions.
- – **type:** string
- – **enum:** ['NONE', 'BLOCKED_BY', 'BLOCKING', 'CAUSED_BY', 'CAUSING']

environmentType

- **type:** string
- **description:** Filter the actions by Environment Type
- **enum:** ['ONPREM', 'CLOUD']

costType

- **type:** string
- **description:** Filter the actions by cost Type
- **enum:** ['SAVING', 'INVESTMENT']

descriptionQuery

- **description:** This query will match the details field of the ActionApiDTO to return actions that match the specified expression.
- [QueryInputApiDTO \(on page 421\)](#)

riskQuery

- **description:** This query will match the risk description field of the ActionApiDTO to return actions that match the specified expression.
- [QueryInputApiDTO \(on page 421\)](#)

executionCharacteristics

- **description:** Characteristics of the execution of the action, including disruptiveness and reversibility.
- [ActionExecutionCharacteristicInputApiDTO \(on page 323\)](#)

savingsAmountRange

- **description:** This field will match the costPrice statistic field of the ActionApiDTO to return actions that have a costPrice amount between minValue and maxValue, inclusive
- [RangeInputApiDTO \(on page 423\)](#)

hasSchedule

- **type:** boolean
- **description:** If true, only actions that have an associated execution schedule will be returned.

hasPrerequisites

- **type:** boolean
- **description:** If true, only actions that have a prerequisite preventing execution of the action will be returned.

actionStateList

- **type:** array
- - **type:** string
 - **enum:** ['PENDING_ACCEPT', 'ACCEPTED', 'REJECTED', 'PRE_IN_PROGRESS', 'POST_IN_PROGRESS', 'IN_PROGRESS', 'SUCCEEDED', 'FAILED', 'RECOMMENDED', 'DISABLED', 'QUEUED', 'CLEARED', 'ACCOUNTING', 'READY', 'FAILING']

actionModeList

- **type:** array
- - **type:** string
 - **enum:** ['DISABLED', 'RECOMMEND', 'EXTERNAL_APPROVAL', 'MANUAL', 'AUTOMATIC', 'COLLECTION']

riskSeverityList

- **type:** array
- - **type:** string

riskSubCategoryList

- **type:** array
- – **type:** string

ActionResourceImpactStatInput

Description

Model to describe an Action Resource Impact Stat Input

Required Parameters

actionType

- **type:** string
- **description:** Action Type
- **enum:** ['NONE', 'START', 'MOVE', 'SCALE', 'ALLOCATE', 'SUSPEND', 'TERMINATE', 'SPAWN', 'ADD_PROVIDER', 'CHANGE', 'REMOVE_PROVIDER', 'PROVISION', 'RECONFIGURE', 'RESIZE', 'RESIZE_CAPACITY', 'WARN', 'RECONFIGURE_THRESHOLD', 'DELETE', 'RIGHT_SIZE', 'RESERVE_ON_PM', 'RESERVE_ON_DS', 'RESIZE_FOR_EFFICIENCY', 'RESIZE_FOR_PERFORMANCE', 'CROSS_TARGET_MOVE', 'MOVE_TOGETHER', 'ACTIVATE', 'DEACTIVATE', 'BUY_RI']

commodityType

- **type:** string
- **example:** VCPU
- **description:** Commodity Type that could be impacted by the action. For example, VCPU or VMEM for a Resize VM action.
- **enum:** ['ACTION_PERMIT', 'ACTIVE_SESSIONS', 'APPLICATION', 'BALLOONING', 'BUFFER_COMMODITY', 'CLUSTER', 'COLLECTION_TIME', 'COOLING', 'CONNECTION', 'COUPON', 'CPU', 'CPU_ALLOCATION', 'CPU_PROVISIONED', 'CPU_REQUEST_ALLOCATION', 'CROSS_CLOUD_MOVE_SVC', 'CROSS_CLUSTER_MOVE_SVC', 'DATACENTER', 'DATASTORE', 'DB_CACHE_HIT_RATE', 'DB_MEM', 'DISK_ARRAY_ACCESS', 'DRS_SEGMENTATION', 'DSPM_ACCESS', 'EXTENT', 'FLOW', 'FLOW_ALLOCATION', 'HEAP', 'HOST_LUN_ACCESS', 'IMAGE_CPU', 'IMAGE_MEM', 'IMAGE_STORAGE', 'INSTANCE_DISK_SIZE', 'INSTANCE_DISK_TYPE', 'IO_THROUGHPUT', 'LICENSE_ACCESS', 'MEM', 'MEM_ALLOCATION', 'MEM_REQUEST_ALLOCATION', 'MEM_PROVISIONED', 'NET_THROUGHPUT', 'NETWORK', 'NUM_DISK', 'NUMBER_CONSUMERS', 'NUM_VCORE', 'POOL_CPU', 'POOL_MEM', 'POOL_STORAGE', 'PORT_CHANNEL', 'POWER', 'Q16_VCPU', 'Q1_VCPU', 'Q2_VCPU', 'Q32_VCPU', 'Q4_VCPU', 'Q64_VCPU', 'Q8_VCPU', 'RESPONSE_TIME', 'SAME_CLUSTER_MOVE_SVC', 'SEGMENTATION', 'SLA_COMMODITY', 'SOFTWARE_LICENSE_COMMODITY', 'SPACE', 'STORAGE_ACCESS', 'STORAGE_ALLOCATION', 'STORAGE_AMOUNT', 'STORAGE_CLUSTER', 'STORAGE_LATENCY', 'STORAGE_PROVISIONED', 'SWAPPING', 'THREADS', 'TRANSACTION', 'TRANSACTION_LOG', 'VCPU', 'VCPU_LIMIT_QUOTA', 'VCPU_REQUEST', 'VCPU_REQUEST_QUOTA', 'VDC', 'VMEM', 'VMEM_LIMIT_QUOTA', 'VMEM_REQUEST', 'VMEM_REQUEST_QUOTA', 'VMPM_ACCESS', 'VSTORAGE', 'ZONE', 'LICENSE_COMMODITY', 'Q3_VCPU', 'NUMBER_CONSUMERS_PM', 'Q6_VCPU', 'Q7_VCPU', 'QN_VCPU', 'RIGHT_SIZE_SVC', 'RIGHT_SIZE_DOWN', 'MOVE', 'Q5_VCPU', 'STORAGE', 'NUMBER_CONSUMERS_STORAGE', 'ACCESS', 'RIGHT_SIZE_UP', 'VAPP_ACCESS', 'HOT_STORAGE', 'HA_COMMODITY', 'NETWORK_POLICY', 'SERVICE_LEVEL_CLUSTER', 'PROCESSING_UNITS', 'TENANCY_ACCESS', 'TEMPLATE_ACCESS', 'BURST_BALANCE', 'DESIRED_COUPON', 'NETWORK_INTERFACE_COUNT', 'BICLIQUE', 'TAINT', 'LABEL', 'UNKNOWN']

targetEntityType

- **type:** string
- **description:** Target entity type for an action. For example, VirtualMachine for a resize virtual machine action
- **enum:** ['ApplicationComponent', 'VirtualMachine', 'Storage', 'DiskArray', 'Database', 'DatabaseServer', 'Container', 'LogicalPool']

ActionScheduleApiDTO

Description

Model to describe an Action Schedule.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

nextOccurrence

- **type:** string
- **description:** The time of the next occurrence represented in ISO8601 local time (YYYY-MM-DDTHH:MM:SS). For example, 2019-04-04T19:15.

nextOccurrenceTimestamp

- **type:** integer
- **format:** int64
- **description:** The time of the next occurrence of this schedule represented in Timestamp in milliseconds. For example, 1562100619000

timeZoneId

- **type:** string
- **description:** The timezone of the schedule

mode

- **type:** string
- **description:** The action mode affected by the schedule
- **enum:** ['DISABLED', 'RECOMMEND', 'EXTERNAL_APPROVAL', 'MANUAL', 'AUTOMATIC', 'COLLECTION']

acceptedByUserForMaintenanceWindow

- **type:** boolean
- **description:** Boolean signifying acceptance or rejection of the action.

userName

- **type:** string
- **description:** The user who accepted the action for the maintenance window.

remainingTimeActiveInMs

- **type:** integer
- **format:** int64
- **description:** The amount of time that the schedule is going to be active at the time of call in milliseconds. This field will not be populated if the schedule is not currently active.

ActionScopesApiInputDTO

Description

Model to describe the request for Actions in multiple Scopes

Required Parameters

actionInput

- **description:** List of requested actions
- [ActionApiInputDTO \(on page 319\)](#)

Optional Parameters

scopes

- **type:** array
- **description:** List of uuid to use as scope
- – **type:** string

relatedType

- **type:** string
- **description:** Get the actions for the entity type related to the scopes

ActionScopesResourceImpactStatApiInputDTO

Description

Model to describe the request for Actions Resource Impacts in multiple Scopes

Required Parameters

actionResourceImpactStatApiInput

- **description:** Requested action resource impact stats
- [ActionResourceImpactStatApiInputDTO \(on page 324\)](#)

scopes

- **type:** array
- **description:** List of uuid to use as scope
- – **type:** string

ActiveDirectoryApiDTO

Description

Model to describe an Active Directory. It contains domain name and server name which are global to Turbonomic server.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

domainName

- **type:** string
- **description:** The domain name of current active directory

loginProviderURI

- **type:** string
- **description:** The server name of current active directory

isSecure

- **type:** boolean
- **description:** The server name of current active directory

groups

- **type:** array
- **description:** Active directory groups defined in Ops Mgr for current active directory
- – [ActiveDirectoryGroupApiDTO \(on page 329\)](#)

ActiveDirectoryGroupApiDTO

Description

Model to describe an Active Directory Group. Active Directory groups are used to manage user authentication. You can specify role and scope for the group, and any member of the AD group can log into Turbonomic with those privileges.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

type

- **type:** string
- **description:** The user type for current active directory group

roleName

- **type:** string
- **description:** The user role name of current active directory group

scope

- **type:** array
- **description:** The scope of current active directory group
- – [GroupApiDTO \(on page 379\)](#)

AddObjectApiDTO

Description

Model to describe an add change in the scenario

Optional Parameters

projectionDays

- **type:** array
- **description:** List of projection days, indicate when to apply the changes
- – **type:** integer
- – **format:** int32

target

- **description:** Target of the change, entity or group
- [BaseApiDTO \(on page 333\)](#)

count

- **type:** integer
- **format:** int32
- **description:** How many times to apply the add change

targetEntityType

- **type:** string
- **description:** Type of entity to add from group target

AggregateCommodityFieldApiDTO

Description

Inherits From

This DTO inherits from [FieldApiDTO](#) (on page 377)

Required Parameters

aggregation

- **type:** string
- **description:** The type of aggregation.
- **readOnly:** True
- **enum:** ['TOTAL', 'AVERAGE']

commodityAttribute

- **type:** string
- **description:** The commodity attribute.
- **readOnly:** True
- **enum:** ['USED', 'CAPACITY', 'PEAK', 'CURRENT_UTILIZATION', 'WEIGHTED_HISTORICAL_UTILIZATION', 'PERCENTILE_HISTORICAL_UTILIZATION']

commodityType

- **type:** string
- **description:** The commodity name.
- **readOnly:** True
- **enum:** ['ACTION_PERMIT', 'ACTIVE_SESSIONS', 'APPLICATION', 'BALLOONING', 'BUFFER_COMMODITY', 'CLUSTER', 'COLLECTION_TIME', 'COOLING', 'CONNECTION', 'COUPON', 'CPU', 'GPU_ALLOCATION', 'CPU_PROVISIONED', 'CPU_REQUEST_ALLOCATION', 'CROSS_CLOUD_MOVE_SVC', 'CROSS_CLUSTER_MOVE_SVC', 'DATACENTER', 'DATASTORE', 'DB_CACHE_HIT_RATE', 'DB_MEM', 'DISK_ARRAY_ACCESS', 'DRS_SEGMENTATION', 'DSPM_ACCESS', 'EXTENT', 'FLOW', 'FLOW_ALLOCATION', 'HEAP', 'HOST_LUN_ACCESS', 'IMAGE_CPU', 'IMAGE_MEM', 'IMAGE_STORAGE', 'INSTANCE_DISK_SIZE', 'INSTANCE_DISK_TYPE', 'IO_THROUGHPUT', 'LICENSE_ACCESS', 'MEM', 'MEM_ALLOCATION', 'MEM_REQUEST_ALLOCATION', 'MEM_PROVISIONED', 'NET_THROUGHPUT', 'NETWORK', 'NUM_DISK', 'NUMBER_CONSUMERS', 'NUM_VCORE', 'POOL_CPU', 'POOL_MEM', 'POOL_STORAGE', 'PORT_CHANNEL', 'POWER', 'Q16_VCPU', 'Q1_VCPU', 'Q2_VCPU', 'Q32_VCPU', 'Q4_VCPU', 'Q64_VCPU', 'Q8_VCPU', 'RESPONSE_TIME', 'SAME_CLUSTER_MOVE_SVC', 'SEGMENTATION', 'SLA_COMMODITY', 'SOFTWARE_LICENSE_COMMODITY', 'SPACE', 'STORAGE_ACCESS', 'STORAGE_ALLOCATION', 'STORAGE_AMOUNT', 'STORAGE_CLUSTER', 'STORAGE_LATENCY', 'STORAGE_PROVISIONED', 'SWAPPING', 'THREADS', 'TRANSACTION', 'TRANSACTION_LOG', 'VCPU', 'VCPU_LIMIT_QUOTA', 'VCPU_REQUEST', 'VCPU_REQUEST_QUOTA', 'VDC', 'VMEM', 'VMEM_LIMIT_QUOTA', 'VMEM_REQUEST', 'VMEM_REQUEST_QUOTA', 'VMPM_ACCESS', 'VSTORAGE', 'ZONE', 'LICENSE_COMMODITY', 'Q3_VCPU', 'NUMBER_CONSUMERS_PM', 'Q6_VCPU', 'Q7_VCPU', 'QN_VCPU', 'RIGHT_SIZE_SVC', 'RIGHT_SIZE_DOWN', 'MOVE', 'Q5_VCPU', 'STORAGE', 'NUMBER_CONSUMERS_STORAGE', 'ACCESS', 'RIGHT_SIZE_UP', 'VAPP_ACCESS', 'HOT_STORAGE', 'HA_COMMODITY', 'NETWORK_POLICY', 'SERVICE_LEVEL_CLUSTER', 'PROCESSING_UNITS', 'TENANCY_ACCESS', 'TEMPLATE_ACCESS', 'BURST_BALANCE', 'DESIRED_COUPON', 'NETWORK_INTERFACE_COUNT', 'BICLIQUE', 'TAINT', 'LABEL', 'UNKNOWN']

AggregatedHealthResponseDTO

Description

A DTO for a single aggregated health response item.

Required Parameters

healthState

- **type:** string
- **description:** The (aggregated) health state for the subcategory.
- **enum:** ['CRITICAL', 'MAJOR', 'MINOR', 'NORMAL']

numberOfItems

- **type:** integer
- **format:** int32
- **description:** Number of entities whose state matches healthState.

subcategory

- **type:** string
- **description:** Health subcategory.

Optional Parameters

recommendations

- **type:** array
- **description:** A list of recommendations specific for each problem (error) type.
 - [Recommendation \(on page 425\)](#)

AutomatedEntityDefinitionData

Description

Inherits From

This DTO inherits from [IEntityDefinitionData \(on page 385\)](#)

Required Parameters

entityType

- **type:** string
- **description:** Connected entity type
- **enum:** ['ApplicationComponent', 'BusinessTransaction', 'Container', 'ContainerPod', 'DatabaseServer', 'Service', 'VirtualMachine']

namePrefix

- **type:** string
- **description:** Naming prefix for automated entity definition

Optional Parameters

generationAndConnectionAttribute

- **description:** Defined criteria of connected entities
- [FilterApiDTO \(on page 378\)](#)

BaseApiDTO

Description

Basic information of an entity

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

BaseCommodityApiDTO

Description

Describes a commodity

Required Parameters

type

- **type:** string
- **description:** The type of the commodity
- **enum:** ['ACTION_PERMIT', 'ACTIVE_SESSIONS', 'APPLICATION', 'BALLOONING', 'BUFFER_COMMODITY', 'CLUSTER', 'COLLECTION_TIME', 'COOLING', 'CONNECTION', 'COUPON', 'CPU', 'CPU_ALLOCATION', 'CPU_PROVISIONED', 'CPU_REQUEST_ALLOCATION', 'CROSS_CLOUD_MOVE_SVC', 'CROSS_CLUSTER_MOVE_SVC', 'DATACENTER', 'DATASTORE', 'DB_CACHE_HIT_RATE', 'DB_MEM', 'DISK_ARRAY_ACCESS', 'DRS_SEGMENTATION', 'DSPM_ACCESS', 'EXTENT', 'FLOW', 'FLOW_ALLOCATION', 'HEAP', 'HOST_LUN_ACCESS', 'IMAGE_CPU', 'IMAGE_MEM', 'IMAGE_STORAGE', 'INSTANCE_DISK_SIZE', 'INSTANCE_DISK_TYPE', 'IO_THROUGHPUT', 'LICENSE_ACCESS', 'MEM', 'MEM_ALLOCATION', 'MEM_REQUEST_ALLOCATION', 'MEM_PROVISIONED', 'NET_THROUGHPUT', 'NETWORK', 'NUM_DISK', 'NUMBER_CONSUMERS', 'NUM_VCORE', 'POOL_CPU', 'POOL_MEM', 'POOL_STORAGE', 'PORT_CHANNEL', 'POWER', 'Q16_VCPU', 'Q1_VCPU', 'Q2_VCPU', 'Q32_VCPU', 'Q4_VCPU', 'Q64_VCPU', 'Q8_VCPU', 'RESPONSE_TIME', 'SAME_CLUSTER_MOVE_SVC', 'SEGMENTATION', 'SLA_COMMODITY', 'SOFTWARE_LICENSE_COMMODITY', 'SPACE', 'STORAGE_ACCESS', 'STORAGE_ALLOCATION', 'STORAGE_AMOUNT', 'STORAGE_CLUSTER', 'STORAGE_LATENCY', 'STORAGE_PROVISIONED', 'SWAPPING', 'THREADS', 'TRANSACTION', 'TRANSACTION_LOG', 'VCPU', 'VCPU_LIMIT_QUOTA', 'VCPU_REQUEST', 'VCPU_REQUEST_QUOTA', 'VDC', 'VMEM', 'VMEM_LIMIT_QUOTA', 'VMEM_REQUEST', 'VMEM_REQUEST_QUOTA', 'VMPM_ACCESS', 'VSTORAGE', 'ZONE', 'LICENSE_COMMODITY', 'Q3_VCPU', 'NUMBER_CONSUMERS_PM', 'Q6_VCPU', 'Q7_VCPU', 'QN_VCPU', 'RIGHT_SIZE_SVC', 'RIGHT_SIZE_DOWN', 'MOVE', 'Q5_VCPU', 'STORAGE', 'NUMBER_CONSUMERS_STORAGE', 'ACCESS', 'RIGHT_SIZE_UP', 'VAPP_ACCESS', 'HOT_STORAGE', 'HA_COMMODITY', 'NETWORK_POLICY', 'SERVICE_LEVEL_CLUSTER', 'PROCESSING_UNITS', 'TENANCY_ACCESS', 'TEMPLATE_ACCESS', 'BURST_BALANCE', 'DESIRED_COUPON', 'NETWORK_INTERFACE_COUNT', 'BICLIQUE', 'TAINT', 'LABEL', 'UNKNOWN']

Optional Parameters

key

- **type:** string
- **description:** The specific commodity

units

- **type:** string
- **description:** The units in which the commodity is measured, if any

BaseGroupApiDTO

Description

Base model to describe a Group.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

membersCount

- **type:** integer
- **format:** int32
- **description:** Number of members of the Group

BasicActionApiDTO

Description

Model to tersely describe an action, providing only a set of basic fields

Optional Parameters

actionType

- **type:** string
- **description:** Type
- **enum:** ['START', 'MOVE', 'SCALE', 'ALLOCATE', 'SUSPEND', 'PROVISION', 'RECONFIGURE', 'RESIZE', 'DELETE', 'RIGHT_SIZE', 'BUY_RI']

details

- **type:** string
- **description:** A user-readable string describing the action

target

- **description:** Target entity for an action. For example, the VM in a Resize Action, or the host for a VM move
- [DiscoveredEntityApiDTO \(on page 370\)](#)

currentEntity

- **description:** Current entity, such as the current host that a VM resides on for a VM move action
- [DiscoveredEntityApiDTO \(on page 370\)](#)

newEntity

- **description:** Destination entity, such as the host that a VM will move to for a VM move action
- [DiscoveredEntityApiDTO \(on page 370\)](#)

actionID

- **type:** integer
- **format:** int64
- **description:** Id of the action

BillingFamilyApiDTO

Description

Inherits From

This DTO inherits from [GroupApiDTO \(on page 379\)](#)

Optional Parameters

masterAccountUuid

- **type:** string
- **description:** The UUID of the master account.

businessUnitApiDTOList

- **type:** array
- **description:** List of business units, for all accounts in this billing family.
- – [BusinessUnitApiDTO \(on page 337\)](#)

BooleanConditionApiDTO

Description

Inherits From

This DTO inherits from [ConditionApiDTO \(on page 354\)](#)

Required Parameters

value

- **type:** boolean
- **description:** The value of the field must be equal to this boolean value
- **readOnly:** True

BooleanFieldValueApiDTO

Description

Inherits From

This DTO inherits from [FieldValueApiDTO \(on page 377\)](#)

Required Parameters

value

- **type:** boolean
- **description:** The value.
- **readOnly:** True

BulkActionRequestApiDTO

Description

BulkActionRequest

Optional Parameters

state

- **type:** string
- **description:** state
- **enum:** ['RUNNING', 'STOPPED', 'SUSPENDED', 'MAINTENANCE', 'FAILOVER', 'UNKNOWN', 'STARTING', 'STOPPING']

error

- **type:** string
- **description:** error

entityUUID

- **type:** string

BulkActionRequestInputDTO

Description

BulkActionInput

Optional Parameters

action

- **type:** string
- **description:** action
- **enum:** ['START', 'STOP']

entityUuids

- **type:** array
- **description:** entityUuids
- – **type:** string

BusinessUnitApiDTO

Description

Model to describe the property of a business unit.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

environmentType

- **type:** string
- **description:** Environment type
- **enum:** ['CLOUD', 'ONPREM', 'HYBRID']

discount

- **type:** number
- **format:** float
- **description:** Entity discount percentage

priceAdjustment

- **description:** Entity price adjustment percentage
- [PriceAdjustmentDTO \(on page 416\)](#)

accountId

- **type:** string
- **description:** Account ID

master

- **type:** boolean
- **description:** Flag which shows whether this account is master or not

associatedTargetId

- **type:** integer
- **format:** int64
- **description:** Target associated with this account, if workloads related to this account are being discovered. If no workloads are discovered for this account, the associatedTargetId will be empty.

budget

- **description:** Budget of the business unit, user only need to set value and units(monthly)
- [StatApiDTO \(on page 463\)](#)

businessUnitType

- **type:** string
- **description:** Type of the business unit instance
- **enum:** ['BUDGET', 'DISCOUNT', 'PRICE_ADJUSTMENT', 'DISCOVERED']

cloudType

- **type:** string
- **description:** Type of the cloud target which is related to current business account.
- **enum:** ['AWS', 'AZURE', 'GCP', 'UNKNOWN']

accountType

- **type:** string
- **description:** The category of the current cloud account.
- **enum:** ['STANDARD', 'GOVERNMENT_US']

riSupported

- **type:** boolean
- **description:** Flag which shows whether this account is RI supported

childrenBusinessUnits

- **type:** array
- **description:** UUIDs of the discovered children business units that will share the budget or discounts configuration of this business unit.
- – **type:** string

targets

- **type:** array
- **description:** Targets associated with the business unit
- – [TargetApiDTO \(on page 476\)](#)

costPrice

- **type:** number
- **format:** float
- **description:** Cost price per Hour

severity

- **type:** string
- **description:** Calculated using the highest severity of the member entities
- **enum:** ['UNKNOWN', 'NORMAL', 'MINOR', 'MAJOR', 'CRITICAL']

membersCount

- **type:** integer
- **format:** int32
- **description:** Number of members of the business unit

memberType

- **type:** string
- **description:** The type of service entities comprising the business unit

related

- **description:** The rate card and the custom pricing information the business unit is using
- [BusinessUnitRelatedApiDTO \(on page 340\)](#)

resourceGroupsCount

- **type:** integer
- **format:** int32
- **description:** The number of Resource Groups belonging to the business unit

displayable

- **type:** boolean
- **description:** Whether business unit is displayable or not

pricingIdentifiers

- **type:** object
- **description:** Pricing identifiers for the business unit
- **additionalProperties:** {'type': 'string'}

BusinessUnitApiInputDTO

Description

Model to describe the parameters for creating a business unit.

Required Parameters

name

- **type:** string
- **description:** Name of the business unit

Optional Parameters

budget

- **description:** Budget of the business unit, user only need to set value
- [StatApiDTO \(on page 463\)](#)

childrenBusinessUnits

- **type:** array
- **description:** UUIDs of the discovered children business units, that will share the budget or discounts configuration of this business unit.
- – **type:** string

discount

- **type:** number
- **format:** float
- **description:** Business unit enterprise-level discount percentage. It will come to effect if cloud service or template-level discounts are not configured.

priceAdjustment

- **description:** Business unit enterprise-level price adjustment percentage. It will come to effect if cloud service or template-level discounts are not configured.
- [PriceAdjustmentDTO \(on page 416\)](#)

targets

- **type:** array
- – **type:** string

nameWithBusinessAccountType

- **type:** string

BusinessUnitPriceAdjustmentApiDTO

Description

Price adjustment values for cloud services and templates related to a business unit. The price adjustment configured on an user-defined business unit apply to cloud services and templates offered by the children business units.

Optional Parameters

servicePriceAdjustments

- **type:** array
- **description:** Price adjustment information for the related cloud services and templates.
- – [CloudServicePriceAdjustmentApiDTO \(on page 350\)](#)

serviceDiscounts

- **type:** array
- **description:** Discount information for the related cloud services and templates
- – [CloudServicePriceAdjustmentApiDTO \(on page 350\)](#)

BusinessUnitRelatedApiDTO

Description

Model to describe relationship between a business unit and its related rate cards and price adjustments

Optional Parameters

rateCard

- **description:** Rate Card related to this Business Unit.
- [BaseApiDTO \(on page 333\)](#)

priceAdjustment

- **description:** Price Adjustment related to this Business Unit.
- [BaseApiDTO \(on page 333\)](#)

BusinessUserEntityAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

sessions

- **type:** array
- **description:** Information about sessions to entities (VM or other) established by this BusinessUser.
- – [BusinessUserSessionApiDTO \(on page 341\)](#)

BusinessUserSessionApiDTO

Description

Session information for a connection established by BusinessUser to an entity (VM or other)

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

businessUserUuid

- **type:** string
- **description:** UUID of the connected BusinessUser

connectedEntityUuid

- **type:** string
- **description:** UUID of the entity that user has a connection to

duration

- **type:** integer
- **format:** int64
- **description:** Time elapsed since the session start in seconds- sessions are always timed

ChangePasswordApiDTO

Description

Optional Parameters

oldPassword

- **type:** string

newPassword

- **type:** string

ClientInputDTO

Description

Required Parameters

name

- **type:** string
- **description:** Name of client

supportedServices

- **type:** array
- **description:** List of supported services
- – **type:** string

ClientNetworkSitesMetadataApiDTO

Description

Optional Parameters

id

- **type:** string
- **description:** id

name

- **type:** string
- **description:** name

ClientNetworkTokenApiDTO

Description

Optional Parameters

id

- **type:** string
- **description:** id

tokenData

- **type:** string
- **description:** Token data

ClientNetworkTokensMetadataApiDTO

Description

Optional Parameters

id

- **type:** string
- **description:** id

created

- **type:** string
- **description:** Created

claimsMade

- **type:** integer
- **format:** int32
- **description:** Claims Made

claimsRemaining

- **type:** integer
- **format:** int32
- **description:** Claims Remaining

claimExpiration

- **type:** string
- **description:** Claim Expiration

ClientServiceApiDTO

Description

Optional Parameters

id

- **type:** string
- **description:** id

supportedServices

- **type:** array
- **description:** Supported services
- – **type:** string

secret

- **type:** string
- **description:** Secret

name

- **type:** string
- **description:** Name of client

CloudAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

zone

- **description:** The zone of the cloud entity
- [BaseApiDTO \(on page 333\)](#)

region

- **description:** The region of the cloud entity
- [BaseApiDTO \(on page 333\)](#)

businessAccount

- **description:** The BusinessAccount of the cloud entity
- [BaseApiDTO \(on page 333\)](#)

resourceGroup

- **description:** The ResourceGroup of the cloud entity
- [BaseApiDTO \(on page 333\)](#)

template

- **description:** The template used to generate the entity
- [BaseApiDTO \(on page 333\)](#)

billingType

- **type:** string
- **description:** The Cloud Billing type

tier

- **type:** string
- **description:** The Tier of the storage

riCoveragePercentage

- **type:** number
- **format:** float
- **description:** The RI coverage percentage

riCoverage

- **description:** Used value stores VM coupons in use, capacity stores coupon capacity
- [StatApiDTO \(on page 463\)](#)

onDemandCost

- **type:** number
- **format:** float
- **description:** On-demand cost paid for workload per Hour (includes Compute and License on-demand costs)

enhancedNetworking

- **type:** string
- **description:** The type of Enhanced Networking supported. If the entity is an AWS VM, this field will be populated by a value describing what kind of enhanced networking, if any, the VM is currently using. If the entity is not an AWS VM, this field is not relevant and will not be populated or displayed.
- **enum:** ['NONE', 'ENA']

enaActive

- **type:** string
- **description:** Whether ENA is active. If the entity is an AWS VM, this field will be populated by a value describing whether ENA is currently in use or not. If the entity is not an AWS VM, this field is not relevant and will not be populated or displayed.
- **enum:** ['Active', 'Inactive']

virtualizationType

- **type:** string
- **description:** The virtualization type. If the entity is an AWS VM, this field will be populated by a value describing what kind of virtualization type, if any, the VM is currently using. If the entity is not an AWS VM, this field is not relevant and will not be populated or displayed.
- **enum:** ['PVM', 'HVM']

architecture

- **type:** string
- **description:** If the entity is an AWS VM, this field will be populated by a value describing what is the architecture of the VM. If the entity is not an AWS VM, this field is not relevant and will not be populated or displayed.
- **enum:** ['32-bit', '64-bit']

nvme

- **type:** string
- **description:** NVMe driver support. If the entity is an AWS VM, this field will be true if NVMe driver installed. If the entity is not an AWS VM, this field is not relevant and will not be populated or displayed.
- **enum:** ['Installed', 'Not installed']

entityUptime

- **description:** The entity uptime
- [EntityUptimeApiDTO \(on page 375\)](#)

tenancy

- **type:** string
- **description:** The tenancy type for VMs
- **enum:** ['DEFAULT', 'DEDICATED', 'HOST']

CloudCommitmentAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

startTimeInMilliseconds

- **type:** integer
- **format:** int64
- **description:** The start time of the Cloud Commitment in UTC.

expirationTimeInMilliseconds

- **type:** integer
- **format:** int64
- **description:** The expiration time of the Cloud Commitment in UTC.

termInMilliseconds

- **type:** integer
- **format:** int64
- **description:** The term of the Cloud Commitment.

cloudCommitmentScopeType

- **type:** string
- **description:** The scope of the Cloud Commitment.
- **enum:** ['FamilyScoped', 'FamilyAndOSScoped', 'CloudServiceScoped']

cloudCommitmentScopeDTO

- **description:** The info about the scope of the cloud commitment.
- [CloudCommitmentScopeDTO \(on page 348\)](#)

cloudCommitmentCapacityApiDTO

- **description:** The capacity specific info of the cloud commitment.
- [CloudCommitmentCapacityApiDTO \(on page 347\)](#)

payment

- **type:** string
- **description:** Payment option of the cloud commitment.
- **enum:** ['ALL_UPFRONT', 'PARTIAL_UPFRONT', 'NO_UPFRONT']

providerSpecificType

- **type:** string
- **description:** The provider specific type.
- **enum:** ['SAVINGS_PLAN', 'COMMITTED_USE']

commitmentStatus

- **type:** string
- **description:** The cloud commitment status.
- **enum:** ['Unknown', 'Pending', 'Active', 'Expired', 'Canceled']

CloudCommitmentCapacityApiDTO

Description

Model to describe cloud commitment capacity

Optional Parameters

instanceCapacity

- **type:** integer
- **format:** int64
- **description:** The instance capacity of the cloud commitment.

spendCapacity

- **type:** number
- **format:** double
- **description:** The spend capacity of the cloud commitment.

commoditiesBought

- **type:** object
- **description:** The capacity for each type commodity bought by the commitment.
- **additionalProperties:** {'type': 'number', 'format': 'double'}

CloudCommitmentScopeDTO

Description

Model to describe cloud committment scope.

Optional Parameters

cloudFamilyReferenceApiDTO

- **description:** The family scoped type specific info of the cloud commitment. If null, indicates service scoped cloud commitment
- [CloudFamilyReferenceApiDTO \(on page 348\)](#)

CloudFamilyReferenceApiDTO

Description

Model describe a reference to a cloud family

Optional Parameters

family

- **type:** string
- **description:** The family of the Cloud Commitment.

entityType

- **type:** string
- **description:** The entity type the Cloud Commitment applies to.
- **enum:** ['Application', 'ApplicationComponent', 'ApplicationServer', 'AvailabilityZone', 'BusinessAccount', 'BusinessApplication', 'BusinessTransaction', 'BusinessUser', 'Chassis', 'CloudService', 'ComputeTier', 'Container', 'ContainerPod', 'ContainerSpec', 'Database', 'DatabaseServer', 'DatabaseServerTier', 'DatabaseTier', 'DataCenter', 'DesktopPool', 'DiskArray', 'DPod', 'HCIPhysicalMachine', 'HypervisorServer', 'Internet', 'IOModule', 'LoadBalancer', 'LogicalPool', 'Namespace', 'Network', 'PhysicalMachine', 'ProcessorPool', 'Region', 'ReservedInstance', 'Service', 'ServiceProvider', 'Storage', 'StorageController', 'StorageTier', 'Switch', 'Unknown', 'ViewPod', 'VirtualApplication', 'VirtualDataCenter', 'VirtualMachine', 'VirtualVolume', 'VPod', 'WorkloadController', 'ContainerPlatformCluster', 'CloudCommitment', 'ApplicationComponentSpec', 'VirtualMachineSpec']

CloudProvisionActionDetailsApiDTO

Description

Inherits From

This DTO inherits from [ActionDetailsApiDTO \(on page 321\)](#)

Optional Parameters

onDemandRate

- **type:** number
- **format:** float

onDemandCost

- **type:** number
- **format:** float

subType

- **type:** string

CloudResizeActionDetailsApiDTO

Description

Inherits From

This DTO inherits from [ActionDetailsApiDTO \(on page 321\)](#)

Optional Parameters

onDemandRateBefore

- **type:** number
- **format:** float

onDemandRateAfter

- **type:** number
- **format:** float

onDemandCostBefore

- **type:** number
- **format:** float

onDemandCostAfter

- **type:** number
- **format:** float

riCoverageBefore

- **description:** RI coupons used and capacity of the target entity before action
- [StatApiDTO \(on page 463\)](#)

riCoverageAfter

- **description:** RI coupons used and capacity of the target entity after action
- [StatApiDTO \(on page 463\)](#)

entityUptime

- **description:** The entity uptime which was taken into account when generating the action
- [EntityUptimeApiDTO \(on page 375\)](#)

subType

- **type:** string

CloudServicePriceAdjustmentApiDTO

Description

Price adjustments for cloud service and related templates specified for a certain pricing model.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

environmentType

- **type:** string
- **description:** Environment type
- **enum:** ['CLOUD', 'ONPREM', 'HYBRID']

discount

- **type:** number
- **format:** float
- **description:** Entity discount percentage

priceAdjustment

- **description:** Entity price adjustment percentage
- [PriceAdjustmentDTO \(on page 416\)](#)

pricingModel

- **type:** string
- **description:** Pricing model, 'On demand' for time-based, 'Reserved' for coupon-based, 'Spot' for customer bidding
- **enum:** ['ON_DEMAND', 'RESERVED', 'SPOT']

templateDiscounts

- **type:** array
- **description:** Discount values for the templates offered by the cloud service under certain pricing model.
- – [TemplatePriceAdjustmentDTO \(on page 485\)](#)

templatePriceAdjustments

- **type:** array
- **description:** Price adjustment values for the templates offered by the cloud service under certain pricing model.
- – [TemplatePriceAdjustmentDTO \(on page 485\)](#)

CloudServicePricingModelApiDTO

Description

Cloud service + pricing model pair that is available for a business unit.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

environmentType

- **type:** string
- **description:** Environment type
- **enum:** ['CLOUD', 'ONPREM', 'HYBRID']

discount

- **type:** number
- **format:** float
- **description:** Entity discount percentage

priceAdjustment

- **description:** Entity price adjustment percentage
- [PriceAdjustmentDTO \(on page 416\)](#)

pricingModel

- **type:** string
- **description:** Pricing model, 'On demand' for time-based, 'Reserved' for coupon-based, 'Spot' for customer bidding
- **enum:** ['ON_DEMAND', 'RESERVED', 'SPOT']

CloudSuspendActionDetailsApiDTO

Description

Inherits From

This DTO inherits from [ActionDetailsApiDTO \(on page 321\)](#)

Optional Parameters

onDemandRate

- **type:** number
- **format:** float

onDemandCost

- **type:** number
- **format:** float

subType

- **type:** string

CommodityFieldApiDTO

Description

Inherits From

This DTO inherits from [FieldApiDTO \(on page 377\)](#)

Required Parameters

commodityAttribute

- **type:** string
- **description:** The commodity attribute.
- **readOnly:** True
- **enum:** ['USED', 'CAPACITY', 'PEAK', 'CURRENT_UTILIZATION', 'WEIGHTED_HISTORICAL_UTILIZATION', 'PERCENTILE_HISTORICAL_UTILIZATION']

commodityType

- **type:** string
- **description:** The commodity name.
- **readOnly:** True
- **enum:** ['ACTION_PERMIT', 'ACTIVE_SESSIONS', 'APPLICATION', 'BALLOONING', 'BUFFER_COMMODITY', 'CLUSTER', 'COLLECTION_TIME', 'COOLING', 'CONNECTION', 'COUPON', 'CPU', 'CPU_ALLOCATION', 'CPU_PROVISIONED', 'CPU_REQUEST_ALLOCATION', 'CROSS_CLOUD_MOVE_SVC', 'CROSS_CLUSTER_MOVE_SVC', 'DATACENTER', 'DATASTORE', 'DB_CACHE_HIT_RATE', 'DB_MEM', 'DISK_ARRAY_ACCESS', 'DRS_SEGMENTATION', 'DSPM_ACCESS', 'EXTENT', 'FLOW', 'FLOW_ALLOCATION', 'HEAP', 'HOST_LUN_ACCESS', 'IMAGE_CPU', 'IMAGE_MEM', 'IMAGE_STORAGE', 'INSTANCE_DISK_SIZE', 'INSTANCE_DISK_TYPE', 'IO_THROUGHPUT', 'LICENSE_ACCESS', 'MEM', 'MEM_ALLOCATION', 'MEM_REQUEST_ALLOCATION', 'MEM_PROVISIONED', 'NET_THROUGHPUT', 'NETWORK', 'NUM_DISK', 'NUMBER_CONSUMERS', 'NUM_VCORE', 'POOL_CPU', 'POOL_MEM', 'POOL_STORAGE', 'PORT_CHANNEL', 'POWER', 'Q16_VCPU', 'Q1_VCPU', 'Q2_VCPU', 'Q32_VCPU', 'Q4_VCPU', 'Q64_VCPU', 'Q8_VCPU', 'RESPONSE_TIME', 'SAME_CLUSTER_MOVE_SVC', 'SEGMENTATION', 'SLA_COMMODITY', 'SOFTWARE_LICENSE_COMMODITY', 'SPACE', 'STORAGE_ACCESS', 'STORAGE_ALLOCATION', 'STORAGE_AMOUNT', 'STORAGE_CLUSTER', 'STORAGE_LATENCY', 'STORAGE_PROVISIONED', 'SWAPPING', 'THREADS', 'TRANSACTION', 'TRANSACTION_LOG', 'VCPU', 'VCPU_LIMIT_QUOTA', 'VCPU_REQUEST', 'VCPU_REQUEST_QUOTA', 'VDC', 'VMEM', 'VMEM_LIMIT_QUOTA', 'VMEM_REQUEST', 'VMEM_REQUEST_QUOTA', 'VMPM_ACCESS', 'VSTORAGE', 'ZONE', 'LICENSE_COMMODITY', 'Q3_VCPU', 'NUMBER_CONSUMERS_PM', 'Q6_VCPU', 'Q7_VCPU', 'QN_VCPU', 'RIGHT_SIZE_SVC', 'RIGHT_SIZE_DOWN', 'MOVE', 'Q5_VCPU', 'STORAGE', 'NUMBER_CONSUMERS_STORAGE', 'ACCESS', 'RIGHT_SIZE_UP', 'VAPP_ACCESS', 'HOT_STORAGE', 'HA_COMMODITY', 'NETWORK_POLICY', 'SERVICE_LEVEL_CLUSTER', 'PROCESSING_UNITS', 'TENANCY_ACCESS', 'TEMPLATE_ACCESS', 'BURST_BALANCE', 'DESIRED_COUPON', 'NETWORK_INTERFACE_COUNT', 'BICLIQUE', 'TAINT', 'LABEL', 'UNKNOWN']

ComputeTierAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Required Parameters

instanceStorageSize

- **type:** number
- **format:** float
- **description:** Size per instance storage in GB. This will be 0 if no instance storage's are present for compute tier.

numInstanceStorages

- **type:** number
- **format:** float
- **description:** Number of instance storage disks. Compute tiers can have 0 or more instance storage disks.

tierFamily

- **type:** string
- **description:** Family of compute tier (for example 'M4' for M4.large)

ConditionApiDTO

Description

A condition on a field of an entity or group.

Required Parameters

conditionType

- **type:** string
- **description:** Type of compared values.
- **readOnly:** True
- **enum:** ['NUMBER', 'TEXT', 'INCLUSION', 'INTEGER', 'BOOLEAN']

field

- **description:** Field to compare.
- **readOnly:** True
- [FieldApiDTO \(on page 377\)](#)

operator

- **type:** string
- **description:** Operator to use.
- **readOnly:** True
- **enum:** ['EQ', 'NEQ', 'GT', 'LT', 'GE', 'LE', 'LIKE', 'IN']

ConfigChangesApiDTO

Description

Policies and Settings changes in the scenario

Optional Parameters

addPolicyList

- **type:** array
- **description:** List of Placement Policies to add
- – [PolicyApiDTO \(on page 412\)](#)

removePolicyList

- **type:** array
- **description:** List of Placement Policies to remove
- – [PolicyApiDTO \(on page 412\)](#)

automationSettingList

- **type:** array
- **description:** List of automation settings
- – [SettingApiDTOString \(on page 456\)](#)

removeConstraintList

- **type:** array
- **description:** List of constraints to remove
- – [RemoveConstraintApiDTO \(on page 430\)](#)

riSettingList

- **type:** array
- **description:** List of Reserved Instance settings
- – [SettingApiDTO \(on page 458\)](#)

osMigrationSettingList

- **type:** array
- **description:** List of OS migration settings
- – [SettingApiDTOString \(on page 456\)](#)

includedCoupons

- **description:** List of Included Coupons (RIs) and related information
- [IncludedCouponsApiDTO \(on page 386\)](#)

subscription

- **description:** Subscription
- [BusinessUnitApiDTO \(on page 337\)](#)

ConstraintApiDTO

Description

Model to describe the property of constraints, corresponding to entities constraints view in ui.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

relation

- **type:** string
- **enum:** ['sold', 'bought']

entityType

- **type:** string
- **description:** entity type of providers or consumers

relatedEntities

- **type:** array
- **description:** if relation is sold they are consumers, if bought they are providers
- – [ServiceEntityApiDTO \(on page 451\)](#)

numPotentialEntities

- **type:** integer
- **format:** int32
- **description:** how many other providers/consumers can fulfill the constraint

placementOptions

- **type:** array
- **description:** A list of constraints prevent finding better placement for an entity
- – [PlacementOptionApiDTO \(on page 409\)](#)

ConstraintApiInputDTO

Description

Model to describe the property of constraints

Optional Parameters

relation

- **type:** string
- **enum:** ['sold', 'bought']

placementOptions

- **type:** array
- **description:** A list of constraints prevent finding better placement for an entity
- – [PlacementOptionApiInputDTO \(on page 410\)](#)

entityTypeFilter

- **type:** string
- **description:** potential entity type filter
- **enum:** ['Application', 'ApplicationComponent', 'ApplicationServer', 'AvailabilityZone', 'BusinessAccount', 'BusinessApplication', 'BusinessTransaction', 'BusinessUser', 'Chassis', 'CloudService', 'ComputeTier', 'Container', 'ContainerPod', 'ContainerSpec', 'Database', 'DatabaseServer', 'DatabaseServerTier', 'DatabaseTier', 'DataCenter', 'DesktopPool', 'DiskArray', 'DPod', 'HCIPhysicalMachine', 'HypervisorServer', 'Internet', 'IOModule', 'LoadBalancer', 'LogicalPool', 'Namespace', 'Network', 'PhysicalMachine', 'ProcessorPool', 'Region', 'ReservedInstance', 'Service', 'ServiceProvider', 'Storage', 'StorageController', 'StorageTier', 'Switch', 'Unknown', 'ViewPod', 'VirtualApplication', 'VirtualDataCenter', 'VirtualMachine', 'VirtualVolume', 'VPod', 'WorkloadController', 'ContainerPlatformCluster', 'CloudCommitment', 'ApplicationComponentSpec', 'VirtualMachineSpec']

ContainerPlatformContextAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

namespace

- **type:** string
- **description:** The namespace that a container platform entity belong to - [DEPRECATED - Use: namespaceEntity]

containerPlatformCluster

- **type:** string
- **description:** The container platform cluster name that an entity belongs to - [DEPRECATED - Use: containerClusterEntity]

workloadControllerEntity

- **description:** The workload controller entity that an entity belongs to
- [BaseApiDTO \(on page 333\)](#)

namespaceEntity

- **description:** The namespace entity that an entity belongs to
- [BaseApiDTO \(on page 333\)](#)

containerClusterEntity

- **description:** The container platform cluster entity that an entity belongs to
- [BaseApiDTO \(on page 333\)](#)

CostInputApiDTO

Description

Model to describe the request for Cost Statistics by a Time range

Optional Parameters

tagFilters

- **type:** array
- **description:** List of Tag Filters. NOTE: Required non-empty when used with costGroupBys set to "TAG"
- [TagApiDTO \(on page 476\)](#)

costGroupBys

- **type:** array
- **description:** List of values to group the results by. NOTE: When used non-empty tagFilters required
- **type:** string
- **enum:** ['TAG', 'TAG_GROUP', 'ENTITY', 'ENTITY_TYPE', 'ACCOUNT', 'REGION', 'CLOUD_SERVICE', 'SERVICE_PROVIDER', 'CLOUD_TIER_PROVIDER', 'COST_CATEGORY', 'PRICE_MODEL']

startDate

- **type:** string
- **description:** Start time of the period to filter. If startDate and endDate not provided current stats will be processed

endDate

- **type:** string
- **description:** End time of the period to filter. If startDate and endDate not provided current stats will be processed

CpuModelApiDTO

Description

Model to describe a Template: contains the resources used to Deploy a VM or to Add Workload/Supply in a Plan

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

numCores

- **type:** integer
- **format:** int32
- **description:** Number of Cores

speed

- **type:** integer
- **format:** int32
- **description:** Speed

scalingFactor

- **type:** number
- **format:** double
- **description:** Scaling Factor

modelName

- **type:** string

CriteriaOptionApiDTO

Description

Generic model used to describe a search criteria option

Optional Parameters

value

- **type:** string
- **description:** value

displayName

- **type:** string
- **description:** value to display, more readable

subValues

- **type:** array
- **description:** possible sub-values associated with the main value
- – **type:** string

DBEntityAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

dbEngine

- **type:** string
- **description:** The Database engine

dbEdition

- **type:** string
- **description:** The Database edition

dbVersion

- **type:** string
- **description:** The Database engine version

licenseModel

- **type:** string
- **description:** The license model of the database engine

deploymentType

- **type:** string
- **description:** The deployment type of the database engine

maxConcurrentWorkers

- **type:** integer
- **format:** int32
- **description:** Maximum concurrent workers allowed for the DB

maxConcurrentSessions

- **type:** integer
- **format:** int32
- **description:** Maximum concurrent sessions allowed for the DB

pricingModel

- **type:** string
- **example:** DTU
- **description:** Database Pricing Model.
- **enum:** ['DTU', 'vCore']

replicationRole

- **type:** string
- **example:** Primary
- **description:** Replication role if DB is part of geo replicated DB. Currently applies to Azure DB only.
- **enum:** ['Primary', 'Secondary', 'None']

storageTier

- **type:** string
- **example:** GP2
- **description:** Storage Tier

dbServerName

- **type:** string
- **description:** The server name of a database

serviceTier

- **type:** string
- **example:** Hyperscale
- **description:** The service tier of a database, generally defines the storage architecture, space and I/O limits, and business continuity options related to availability and disaster recovery.
- **enum:** ['Free', 'Basic', 'Standard', 'Premium', 'GeneralPurpose', 'BusinessCritical', 'Hyperscale']

computeTier

- **type:** string
- **example:** Provisioned Compute
- **description:** The compute tier of a database. Compute tier options include the provisioned and serverless compute tiers

hardwareGeneration

- **type:** string
- **example:** Gen4
- **description:** Database hardware generation. The generation of hardware that underlies the DB instance

DatabaseServerEntityAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

dbEngine

- **type:** string
- **description:** The Database engine

dbEdition

- **type:** string
- **description:** The Database edition

dbVersion

- **type:** string
- **description:** The Database engine version

licenseModel

- **type:** string
- **description:** The license model of the database engine

deploymentType

- **type:** string
- **description:** The deployment type of the database engine

maxConcurrentWorkers

- **type:** integer
- **format:** int32
- **description:** Maximum concurrent workers allowed for the DB

maxConcurrentSessions

- **type:** integer
- **format:** int32
- **description:** Maximum concurrent sessions allowed for the DB

pricingModel

- **type:** string
- **example:** DTU
- **description:** Pricing Model followed by DB.

storageTier

- **type:** string
- **example:** GP2
- **description:** Storage Tier

clusterRole

- **type:** string
- **description:** Cluster Role
- **enum:** ['Writer', 'Reader']

hourlyBilledOps

- **type:** number
- **format:** double
- **description:** Hourly Billed Ops - Count of operations per hour

featureStateMap

- **type:** object
- **description:** Features
- **additionalProperties:** {'type': 'string', 'enum': ['Enabled', 'Disabled', 'Unknown']}

DatabaseServerTierAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Required Parameters

tierFamily

- **type:** string
- **description:** Family of database server tier (for example 'M5' for db.M5.large)

DatabaseTierAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Required Parameters

tierFamily

- **type:** string
- **description:** Family of database tier (for example 'S' for S4)

DemandEntityInfoDTO

Description

Model to describe a reservation entity

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

template

- [BaseApiDTO \(on page 333\)](#)

deploymentProfile

- [BaseApiDTO \(on page 333\)](#)

operationalCost

- **type:** string

placements

- [PlacementInfoDTO \(on page 408\)](#)

DemandReservationApiDTO

Description

Basic information of an entity

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

prefix

- **type:** string

count

- **type:** integer
- **format:** int32

status

- **type:** string

reserveDateTime

- **type:** string

expireDateTime

- **type:** string

deployDateTime

- **type:** string

reserveCount

- **type:** integer
- **format:** int32

deployCount

- **type:** integer
- **format:** int32

placementExpirationDateTime

- **type:** string

placementResultMessage

- **type:** string
- **description:** Details of placement during failure or success

constraintInfos

- **type:** array
- **description:** The constraints user specified when running reservation which limit where templates could be placed.
- – [ReservationConstraintApiDTO \(on page 432\)](#)

reservationDeployed

- **type:** boolean
- **description:** When true, the reservation will be included in the system and will keep utilizing the resources from host and storage until the corresponding virtual machine utilization starts to reflect on the historically computed utilization.

mode

- **type:** string
- **description:** Demand related behavior for reservation of NO_GROUPING/AFFINITY. This value interacts with the grouping value which is specifying the type of grouping that the demand should consider the mode for. NO_GROUPING and NONE must be paired together and cannot be paired with other values. Combinations such as: (NO_GROUPING - NONE), (AFFINITY - CLUSTER) are valid. Examples of invalid combinations are (NO_GROUPING - CLUSTER), (AFFINITY - NONE).
- **enum:** ['NO_GROUPING', 'AFFINITY']

grouping

- **type:** string
- **description:** Grouping related behavior for reservation of NONE and CLUSTER. This value interacts with the mode value.
- **enum:** ['NONE', 'CLUSTER']

scope

- **type:** array
- **description:** List of uuids of groups (currently limited to Clusters or Host Groups) whose members are the only possible providers of that type of entity. These are further constrained by the constraintIds passed in placement parameters. If multiple groups of providers are specified then it is possible that entities will be placed within different groups.
- – **type:** string

demandEntities

- **type:** array
- – [DemandEntityInfoDTO \(on page 362\)](#)

DemandReservationApiInputDTO

Description

Required Parameters

action

- **type:** string
- **description:** Action requested for the reservation
- **enum:** ['RESERVATION']

demandName

- **type:** string
- **description:** Name of the reservation
- **minLength:** 1
- **maxLength:** 2147483647

parameters

- **type:** array
- **description:** Reservation Parameters
- – [DemandReservationParametersDTO \(on page 366\)](#)
- **maxItems:** 1
- **minItems:** 1

Optional Parameters

mode

- **type:** string
- **description:** Demand related behavior for reservation of NO_GROUPING/AFFINITY. This value interacts with the grouping value which is specifying the type of grouping that the demand should consider the mode for. NO_GROUPING and NONE must be paired together and cannot be paired with other values. Combinations such as: (NO_GROUPING - NONE), (AFFINITY - CLUSTER) are valid. Examples of invalid combinations are (NO_GROUPING - CLUSTER), (AFFINITY - NONE).
- **enum:** ['NO_GROUPING', 'AFFINITY']

grouping

- **type:** string
- **description:** Grouping related behavior for reservation of NONE and CLUSTER. This value interacts with the mode value.
- **enum:** ['NONE', 'CLUSTER']

reserveDateTime

- **type:** string
- **description:** Date to specify when to reserve the Demand

expireDateTime

- **type:** string
- **description:** Date to specify when the Demand request will expire, required if action = RESERVATION

deployDateTime

- **type:** string
- **description:** Date to specify when to deploy the Demand

scope

- **type:** array
- **description:** List of uuids of groups (currently limited to Clusters or Host Groups) whose members are the only possible providers of that type of entity. These are further constrained by the constraintIds passed in placement parameters. If multiple groups of providers are specified then it is possible that entities will be placed within different groups.
- – **type:** string

DemandReservationParametersDTO

Description

Required Parameters

placementParameters

- **description:** Placement parameters
- [PlacementParametersDTO \(on page 410\)](#)

Optional Parameters

deploymentParameters

- **description:** Deployment parameters, required if action = DEPLOYMENT, RESERVATION
- [DeploymentParametersDTO \(on page 366\)](#)

DeploymentParametersDTO

Description

Optional Parameters

deploymentProfileID

- **type:** string
- **description:** Deployment Profile uuid

highAvailability

- **type:** boolean
- **description:** High availability

priority

- **type:** string
- **description:** Workload priority
- **enum:** ['LOW', 'NORMAL', 'MISSION_CRITICAL']

DeploymentProfileApiDTO

Description

Model to describe a Deployment Profile, including target and provider entity parameters

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

account

- **description:** Business account related to the Deployment Profile
- [BaseApiDTO \(on page 333\)](#)

deployParameters

- **type:** array
- **description:** Target and Provider parameters of the Deployment Profile
- – [DeploymentProfileTargetApiDTO \(on page 368\)](#)

DeploymentProfileParamApiDTO

Description

Provider-specific Deployment Profile parameters

Optional Parameters

parameterType

- **type:** string
- **description:** Parameter type. For vCenter, this can be a folder, osConfiguration, or image. For all other technologies, this must be an image.
- **enum:** ['image', 'folder', 'osConfiguration']

properties

- **type:** array
- **description:** A NameValueInputDTO describing the name and value of the parameter.
- – [NameValueInputDTO \(on page 401\)](#)

DeploymentProfileProviderApiDTO

Description

Deployment profile Provider properties

Optional Parameters

provider

- **description:** Provider UUID
- [BaseApiDTO \(on page 333\)](#)

parameters

- **type:** array
- **description:** A DeploymentProfileParamApiDTO describing the parameters for the provider entities
- – [DeploymentProfileParamApiDTO \(on page 367\)](#)

DeploymentProfileTargetApiDTO

Description

Deployment Profile Target properties

Optional Parameters

targetType

- **type:** string
- **description:** Target type for the deployment profile
- **enum:** ['vCenter', 'AWS', 'Azure', 'Softlayer']

providers

- **type:** array
- **description:** DeploymentProfileProviderApiInputDTO describing the provider entity parameters
- – [DeploymentProfileProviderApiDTO \(on page 368\)](#)

DesktopPoolEntityAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

cloneType

- **type:** string
- **description:** Type of a clone provided by the DesktopPool
- **enum:** ['FULL', 'LINKED', 'INSTANT']

provisionType

- **type:** string
- **description:** How clones are provisioned in the DesktopPool
- **enum:** ['UPFRONT', 'ON_DEMAND']

assignmentType

- **type:** string
- **description:** Whether the same clone is assigned each time when user logs back in
- **enum:** ['PERSISTENT', 'DYNAMIC']

masterTemplateUuid

- **type:** string
- **description:** UUID of a master template that is used to create clones. Only one of master VM and master template can be set.

masterVirtualMachineUuid

- **type:** string
- **description:** UUID of a master virtual machine that is used to create clones. Only one of master VM and master template can be set.

masterVirtualMachineSnapshot

- **type:** string
- **description:** Name of the snapshot of a master virtual machine that is used to create clones.

getvCenterClusterName

- **type:** string
- **description:** Name of the vCenter cluster that this DesktopPool draws resources from.

vendorId

- **type:** string
- **description:** Vendor Identifier for the DesktopPool.

DetailDataApiDTO

Description

A single entity detail, represented as key-value pair

Required Parameters

key

- **type:** string
- **description:** Detail key

value

- **type:** string
- **description:** Detail value

Optional Parameters

critical

- **type:** boolean

DiscoveredEntityApiDTO

Description

Model to describe a discovered entity in the system

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

environmentType

- **type:** string
- **description:** Environment type
- **enum:** ['CLOUD', 'ONPREM', 'HYBRID']

discoveredBy

- **description:** Target that discovered the entity
- [TargetApiDTO \(on page 476\)](#)

vendorIds

- **type:** object
- **description:** The mapping of target identifier to vendor-provided identity of this entity on the remote target
- **additionalProperties:** {'type': 'string'}

EntityActionsApiDTO

Description

Basic informations of an entity + actions

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

realtimeMarketReference

- **description:** In case of a Plan Market Entity, this contains the original entity from the Real Time Market
- [BaseApiDTO \(on page 333\)](#)

actions

- **type:** array
- **description:** List of actions for this entity
- – [ActionApiDTO \(on page 315\)](#)

EntityAspect

Description

Parent class for entity aspects

Required Parameters

type

- **type:** string

EntityCountRequestApiDTO

Description

A query used to fetch entity counts.

Optional Parameters

groupBy

- **type:** array
- **description:** Criteria to group the results by.
- **readOnly:** True
- - **type:** string
 - **enum:** ['ENTITY_TYPE', 'ENVIRONMENT_TYPE']

EntityDetailsApiDTO

Description

Model to describe an entity with all its details

Required Parameters

uuid

- **type:** integer
- **format:** int64
- **description:** The internal UUID of the entity

Optional Parameters

details

- **type:** array
- **description:** A list of details, represented as key-value
- - [DetailDataApiDTO \(on page 369\)](#)

EntityMetadataRequestApiDTO

Description

A query used to fetch entity metadata.

Required Parameters

entityType

- **type:** string
- **description:** Entity type to fetch metadata for.
- **readOnly:** True
- **enum:** ['Application', 'ApplicationComponent', 'ApplicationServer', 'AvailabilityZone', 'BusinessAccount', 'BusinessApplication', 'BusinessTransaction', 'BusinessUser', 'Chassis', 'CloudService', 'ComputeTier', 'Container', 'ContainerPod', 'ContainerSpec', 'Database', 'DatabaseServer', 'DatabaseServerTier', 'DatabaseTier', 'DataCenter', 'DesktopPool', 'DiskArray', 'DPod', 'HCIPhysicalMachine', 'HypervisorServer', 'Internet', 'IOModule', 'LoadBalancer', 'LogicalPool', 'Namespace', 'Network', 'PhysicalMachine', 'ProcessorPool', 'Region', 'ReservedInstance', 'Service', 'ServiceProvider', 'Storage', 'StorageController', 'StorageTier', 'Switch', 'Unknown', 'ViewPod', 'VirtualApplication', 'VirtualDataCenter', 'VirtualMachine', 'VirtualVolume', 'VPod', 'WorkloadController', 'ContainerPlatformCluster', 'CloudCommitment', 'ApplicationComponentSpec', 'VirtualMachineSpec']

EntityPriceDTO

Description

Context-specific price. For example the base rate of a template in the context of certain business unit.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

price

- **type:** number
- **format:** float
- **description:** Price in the context of a related entity

EntityQueryApiDTO

Description

A query used to search topology entities.

Required Parameters

select

- **description:** Information to be fetched for each entity.
- **readOnly:** True
- [SelectEntityApiDTO \(on page 450\)](#)

Optional Parameters

where

- **description:** Conditions that each retrieved entity must satisfy.
- **readOnly:** True
- [WhereApiDTO \(on page 499\)](#)

pagination

- **description:** Pagination information.
- **readOnly:** True
- [PaginationApiDTO \(on page 406\)](#)

EntityStatsApiDTO

Description

Basic informations of an entity + statistics

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

environmentType

- **type:** string
- **description:** Environment type
- **enum:** ['CLOUD', 'ONPREM', 'HYBRID']

realtimeMarketReference

- **description:** In case of a Plan Market Entity, this contains the original entity from the Real Time Market
- [BaseApiDTO \(on page 333\)](#)

stats

- **type:** array
- **description:** Collected monitoring statistics
- – [StatSnapshotApiDTO \(on page 467\)](#)

EntityUptimeApiDTO

Description

Model to describe the uptime of an entity

Optional Parameters

creationTimestamp

- **type:** integer
- **format:** int64
- **description:** The creation timestamp of the entity

uptimeDurationInMilliseconds

- **type:** integer
- **format:** int64
- **description:** Uptime duration in milliseconds for the total analyzed duration

totalDurationInMilliseconds

- **type:** integer
- **format:** int64
- **description:** Total analyzed duration in milliseconds for which uptime is calculated

uptimePercentage

- **type:** number
- **format:** double
- **description:** The uptime of the entity as a percentage

EnumFieldValueApiDTO

Description

Inherits From

This DTO inherits from [FieldValueApiDTO \(on page 377\)](#)

Required Parameters

value

- **type:** string
- **description:** The string representation of the value.
- **readOnly:** True

ExecutorInfoApiDTO

Description

Model to describe the entity that triggered action execution. such as a user or a schedule.

Required Parameters

type

- **type:** string
- **description:** The type of the executor. such as a user or a schedule.
- **enum:** ['USER', 'SCHEDULE']

Optional Parameters

scheduleInfo

- **description:** Information about the schedule that triggered this action. Omitted if the action was not triggered by a schedule.
- [ExecutorScheduleApiDTO \(on page 376\)](#)

userInfo

- **description:** Information about the user who triggered this action. Omitted if the action was not triggered by a user.
- [ExecutorUserApiDTO \(on page 376\)](#)

ExecutorScheduleApiDTO

Description

Model to describe the Schedule that executed the action.

Required Parameters

scheduleName

- **type:** string
- **description:** Name of the schedule

ExecutorUserApiDTO

Description

Model to describe the user who triggered this action.

Required Parameters

userName

- **type:** string
- **description:** Name of the user

FailedResourceApiDTO

Description

A description of the resource that caused an entity to be unplaced

Required Parameters

commodity

- **description:** The commodity that caused the entity to be unplaced
- [BaseCommodityApiDTO \(on page 333\)](#)

requestedAmount

- **type:** number
- **format:** double
- **description:** The requested amount of the commodity that caused the entity to be unplaced

Optional Parameters

maxAvailable

- **type:** number
- **format:** double
- **description:** The maximum available amount of the requested commodity. Populated only if there are one or more entities selling the requested commodity.

FieldApiDTO

Description

A field of an entity or group.

Optional Parameters

fieldType

- **type:** string
- **description:** The kind of the field.
- **enum:** ['PRIMITIVE', 'COMMODITY', 'RELATED_ENTITY', 'RELATED_GROUP', 'RELATED_ACTION', 'AGGREGATE_COMMODITY', 'MEMBER']

FieldValueApiDTO

Description

A field of an entity or group with its value.

Required Parameters

field

- **description:** Field to compare.
- **readOnly:** True
- [FieldApiDTO \(on page 377\)](#)

valueType

- **type:** string
- **description:** Type of compared values.
- **readOnly:** True
- **enum:** ['NUMBER', 'TEXT', 'ENUM', 'INTEGER', 'BOOLEAN', 'MULTI_TEXT']

FieldValueTypeApiDTO

Description

A field of an entity or group associated with the type of its values.

Required Parameters

field

- **description:** Field for which information is presented.
- **readOnly:** True
- [FieldApiDTO \(on page 377\)](#)

valueType

- **type:** string
- **description:** Type of values of this field.
- **readOnly:** True
- **enum:** ['NUMBER', 'TEXT', 'ENUM', 'INTEGER', 'BOOLEAN', 'MULTI_TEXT']

Optional Parameters

allowableValues

- **type:** array
- **description:** Allowable string values for this field.
- **readOnly:** True
- – **type:** string

FilterApiDTO

Description

Model used to filter Groups or Entities, every filter is built using a filterType + expType + expVal

Required Parameters

caseSensitive

- **type:** boolean
- **description:** Whether the regex is case sensitive

expType

- **type:** string
- **description:** Type of comparator used while building a filter, the allowable values are 'EQ', 'NEQ', 'RXEQ', 'RXNEQ' for strings, 'EQ', 'NEQ', 'GT', 'LT', 'GTE', 'LTE' for numbers
- **enum:** ['EQ', 'NEQ', 'GT', 'LT', 'GTE', 'LTE', 'RXEQ', 'RXNEQ']

expVal

- **type:** string
- **description:** Regex to be searched for

filterType

- **type:** string
- **description:** Internal name for criterion such as pmsByName, pmsByDC, storageByPMCluster

Optional Parameters

entityType

- **type:** string
- **description:** The entity type which this filter should be applied on

singleLine

- **type:** boolean
- **description:** Whether the regex dot matches all characters including line break characters. Defaults to false.

GroupApiDTO

Description

Model to describe a Group: a collection of Entities. Subclasses include BillingFamilyApiDTO and ResourceGroupApiDTO.

Required Parameters

groupClassName

- **type:** string

groupType

- **type:** string
- **description:** The type of service entities comprising the group

isStatic

- **type:** boolean
- **description:** True if group is static

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

membersCount

- **type:** integer
- **format:** int32
- **description:** Number of members of the Group

entitiesCount

- **type:** integer
- **format:** int32
- **description:** Number of entities of the Group

costPrice

- **type:** number
- **format:** float
- **description:** Cost of the Group per Hour: sum of the costs of the member entities

severity

- **type:** string
- **description:** Calculated using the highest severity of the member entities
- **enum:** ['UNKNOWN', 'NORMAL', 'MINOR', 'MAJOR', 'CRITICAL']

state

- **type:** string
- **description:** Calculated using the state of the member entities
- **enum:** ['UNKNOWN', 'ACTIVE']

environmentType

- **type:** string
- **description:** Environment type
- **enum:** ['CLOUD', 'ONPREM', 'HYBRID']

scope

- **type:** array
- **description:** Scope within which the criteria have to be applied to the list of specific entity type
- – **type:** string

logicalOperator

- **type:** string
- **description:** Logical operator to be applied across all the criteria used to create dynamic group. It can take values 'AND', 'OR', 'XOR'

criteriaList

- **type:** array
- **description:** Criteria list of elements, expression type, expression value, seType - needed to create a dynamic group
- – [FilterApiDTO \(on page 378\)](#)

memberUuidList

- **type:** array
- **description:** Uuid list for members of the group - if group is static
- – **type:** string

realtimeMarketReference

- **description:** In case of a Plan Market Group, this contains the original group from the Real Time Market
- [BaseApiDTO \(on page 333\)](#)

stats

- **type:** array
- **description:** Collected monitoring statistics
- – [StatSnapshotApiDTO \(on page 467\)](#)

temporary

- **type:** boolean
- **description:** The Group is only valid for a limited period of time, it will be removed automatically

activeEntitiesCount

- **type:** integer
- **format:** int32
- **description:** The active entities count of a group

cloudType

- **type:** string
- **description:** Type of the Cloud if environmentType = CLOUD.
- **enum:** ['AWS', 'AZURE', 'GCP', 'HYBRID', 'UNKNOWN']

source

- **description:** The Source of the Group
- [TargetApiDTO \(on page 476\)](#)

memberTypes

- **type:** array
- **description:** The types for immediate members of the group.
- – **type:** string

entityTypes

- **type:** array
- **description:** The types of entities contained in the group. This includes types of entities in nested levels of the group if the group is nested.
- – **type:** string

aspects

- **type:** object
- **description:** Additional info about the Group categorized as Aspects
- **additionalProperties:** {'\$ref': '#/definitions/EntityAspect'}

vendorIds

- **type:** object
- **description:** The mapping of target identifier to vendor-provided identity of this group, if the group is discovered
- **additionalProperties:** {'type': 'string'}

groupOrigin

- **type:** string
- **description:** Origin of entities and groups
- **enum:** ['DISCOVERED', 'USER', 'SYSTEM']

GroupCountRequestApiDTO

Description

A query used to fetch group counts.

Optional Parameters

groupBy

- **type:** array
- **description:** Criteria to group the results by.
- **readOnly:** True
- **uniqueItems:** True
- - **type:** string
 - **enum:** ['GROUP_TYPE', 'ORIGIN']

GroupMetadataRequestApiDTO

Description

A query used to fetch group metadata.

Required Parameters

groupType

- **type:** string
- **description:** Group type to fetch metadata for.
- **readOnly:** True
- **enum:** ['Group', 'Resource', 'Cluster', 'VMCluster', 'StorageCluster', 'BillingFamily', 'NodePool']

GroupQueryApiDTO

Description

A query used to search groups.

Required Parameters

select

- **description:** Information to be fetched for each group.
- **readOnly:** True
- [SelectGroupApiDTO \(on page 451\)](#)

Optional Parameters

where

- **description:** Conditions that each retrieved group must satisfy.
- **readOnly:** True
- [WhereApiDTO \(on page 499\)](#)

pagination

- **description:** Pagination information.
- **readOnly:** True
- [PaginationApiDTO \(on page 406\)](#)

HealthCategoryResponseDTO

Description

A DTO to collect the aggregated health data for one health category.

Required Parameters

categoryDisplayName

- **type:** string
- **description:** The reported health category name.

categoryHealthState

- **type:** string
- **description:** The health state for the reported category.
- **enum:** ['CRITICAL', 'MAJOR', 'MINOR', 'NORMAL']

healthCategory

- **type:** string
- **description:** The reported health category.
- **enum:** ['TARGET', 'ACTION', 'COMPONENT']

Optional Parameters

responseItems

- **type:** array
- **description:** A list of individual health response items for this health category.
- – [AggregatedHealthResponseDTO \(on page 331\)](#)

HttpProxyDTO

Description

Model to describe http proxy settings, like username, password, port number and host

Required Parameters

isProxyEnabled

- **type:** boolean
- **description:** Whether proxy is enabled or not

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

proxyHost

- **type:** string
- **description:** Proxy host

proxyPortNumber

- **type:** integer
- **format:** int32
- **description:** Proxy port number

userName

- **type:** string
- **description:** Proxy username

password

- **type:** string
- **description:** Proxy password

HttpServletResponse

Description

Optional Parameters

status

- **type:** integer
- **format:** int32

headerNames

- **type:** array
- – **type:** string

writer

- [PrintWriter \(on page 416\)](#)

characterEncoding

- **type:** string

committed

- **type:** boolean

bufferSize

- **type:** integer
- **format:** int32

locale

- [Locale \(on page 392\)](#)

contentType

- **type:** string

outputStream

- [ServletOutputStream \(on page 454\)](#)

IEntityDefinitionData

Description

Parent class for topology data definition

Required Parameters

definitionType

- **type:** string
- **enum:** ['MANUAL', 'AUTOMATED']

IManualConnectionsData

Description

Parent class for manual connections.

Required Parameters

connectionType

- **type:** string
- **enum:** ['DYNAMIC', 'STATIC', 'GROUP']

IncludedCouponsApiDTO

Description

Included RI/Coupon and related information in the scenario

Optional Parameters

includedCouponOidsList

- **type:** array
- **description:** User selected list of RIs to be included in plans
- – **type:** integer
- – **format:** int64

iswhiteList

- **type:** boolean

InclusionConditionApiDTO

Description

Inherits From

This DTO inherits from [ConditionApiDTO](#) (on page 354)

Required Parameters

value

- **type:** array
- **description:** A set of strings. The value must belong to one of those.
- **readOnly:** True
- – **type:** string

InputFieldApiDTO

Description

Basic information of an entity

Required Parameters

name

- **type:** string
- **description:** Name of the field, used for field identification.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

value

- **type:** string
- **description:** Field value. Used if field holds primitive value (String, number or boolean)

defaultValue

- **type:** string
- **description:** Default value of the field

isMandatory

- **type:** boolean
- **description:** Whether the field is mandatory. Valid targets must have all the mandatory fields set.

isSecret

- **type:** boolean
- **description:** Whether the field is secret. This means, that field value is stored in an encrypted value and not shown in any logs.

isMultiline

- **type:** boolean
- **description:** Whether the field can have multiline values. Can be only true when the valueType field is set to STRING.

isTargetDisplayName

- **type:** boolean
- **description:** Whether the field is used as a target display name.

valueType

- **type:** string
- **description:** Type of the value this field holds
- **enum:** ['STRING', 'BOOLEAN', 'NUMERIC', 'LIST', 'OBJECT', 'GROUP_SCOPE']

specificValueType

- **type:** string
- **description:** A specific Type of the value that can't be described in valueType

description

- **type:** string
- **description:** Additional information about what the input to the field should be

verificationRegex

- **type:** string
- **description:** The regex pattern that needs to be satisfied for the input field text

groupProperties

- **type:** array
- **description:** Group scope structure, filled if this field represents group scope value
- - **type:** array
 - - **type:** string

allowedValues

- **type:** array
- **description:** Potential values for this field. If nonempty, value must be one of the choices in the list.
- - **type:** string

dependencyKey

- **type:** string
- **description:** A key of a dependency account value field. If this value is not set, field is declared without any dependencies. If an annotated account value field has a dependency it means that it's presence is logically driven by the dependency field. This field is expected to be available ONLY when field specified by {@code dependencyKey} has value {@code dependencyValue}. If this field is not available because of unmet dependency, this field will not be validated and stored in target configuration data. If a dependency for this field is unmet value of this field will be null

dependencyValue

- **type:** string
- **example:** one|two|four
- **description:** Value of a field of account values referenced by {@code dependencyKey} to enable (activate) the annotated field. Value is specified using a regular expression. Specifying just a string will also work correctly. If a referenced account value field is a boolean field, only "true" or "false" are supported as values. If a referenced account value is an enumeration ({@code allowedValues} is specified) this value is only restricted to contain a subset of the allowed values united using a pipe {@code one|two|four}.

IntegerConditionApiDTO

Description

Inherits From

This DTO inherits from [ConditionApiDTO](#) (on page 354)

Required Parameters

value

- **type:** integer
- **format:** int64
- **description:** Value to compare against.
- **readOnly:** True

IntegerFieldValueApiDTO

Description

Inherits From

This DTO inherits from [FieldValueApiDTO \(on page 377\)](#)

Required Parameters

value

- **type:** integer
- **format:** int64
- **description:** The value.
- **readOnly:** True

Optional Parameters

units

- **type:** string
- **description:** Units of measurement.
- **readOnly:** True

LicenseApiDTO

Description

Model to describe properties of a license

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

licenseOwner

- **type:** string
- **description:** The owner of current license

email

- **type:** string
- **description:** The email of current license

customerId

- **type:** string
- **description:** The customer id

expirationDate

- **type:** string
- **description:** The expiration date of current license

features

- **type:** array
- **description:** List of features contained in current license
- **uniqueItems:** True
- – **type:** string

numLicensedEntities

- **type:** integer
- **format:** int32
- **description:** The number of licensed sockets

numInUseEntities

- **type:** integer
- **format:** int32
- **description:** The number of sockets in use

edition

- **type:** string
- **description:** The edition of the current license

filename

- **type:** string
- **description:** The name of the uploaded file

countedEntity

- **type:** string
- **description:** Indicates which entity type is counted with respect to licensing
- **enum:** ['VM', 'SOCKET']

maxReportEditorsCount

- **type:** integer
- **format:** int32
- **description:** Maximum number of report editors

expirationDateTime

- **type:** string
- **format:** date-time

errorReasons

- **type:** array
- **description:** Indicate why the license is invalid
- **uniqueItems:** True
- - **type:** string
 - **enum:** ['DUPLICATE_LICENSE', 'EXPIRED', 'INVALID_EMAIL', 'INVALID_CONTENT_TYPE', 'INVALID_LICENSE_KEY', 'INVALID_LICENSE_TYPE_CWOM_ONLY', 'INVALID_LICENSE_TYPE_FREEMIUM_NOT_ALLOWED', 'INVALID_FEATURE_SET', 'INCOMPATIBLE']

isExpired

- **type:** boolean
- **description:** Indicate if current license is expired
- **readOnly:** True

isValid

- **type:** boolean
- **description:** Indicate if current license is valid or not
- **readOnly:** True

Link

Description

Optional Parameters

rel

- **type:** string
- **xml:** {'attribute': True}

href

- **type:** string
- **xml:** {'attribute': True}

LoadChangesApiDTO

Description

Workload utilization changes in the scenario

Optional Parameters

baselineDate

- **type:** string
- **description:** Baseline date

peakBaselineList

- **type:** array
- **description:** List of peak baseline changes
- – [PeakBaselineApiDTO \(on page 408\)](#)

utilizationList

- **type:** array
- **description:** List of utilization changes
- – [UtilizationApiDTO \(on page 492\)](#)

maxUtilizationList

- **type:** array
- **description:** List of max utilization changes
- – [MaxUtilizationApiDTO \(on page 398\)](#)

overlayStatsList

- **type:** array
- **description:** List of stat changes to override the plan commodities values with the provided input
- – [EntityStatsApiDTO \(on page 374\)](#)

Locale

Description

Optional Parameters

script

- **type:** string

country

- **type:** string

variant

- **type:** string

extensionKeys

- **type:** array
- **uniqueItems:** True
- – **type:** string

unicodeLocaleAttributes

- **type:** array
- **uniqueItems:** True
- – **type:** string

unicodeLocaleKeys

- **type:** array
- **uniqueItems:** True
- – **type:** string

iso3Language

- **type:** string

iso3Country

- **type:** string

displayLanguage

- **type:** string

displayScript

- **type:** string

displayCountry

- **type:** string

displayVariant

- **type:** string

displayName

- **type:** string

language

- **type:** string

LogEntryApiDTO

Description

Basic information of an entity

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

logActionTime

- **type:** integer
- **format:** int64

targetSE

- **type:** string

targetUuid

- **type:** string

currentSE

- **type:** string

currentSEUuid

- **type:** string

newSE

- **type:** string

newSEUuid

- **type:** string

category

- **type:** string

subCategory

- **type:** string

description

- **type:** string

shortDescription

- **type:** string

state

- **type:** string

severity

- **type:** string

count

- **type:** integer
- **format:** int64

total

- **type:** integer
- **format:** int64

user

- **type:** string

type

- **type:** string

importance

- **type:** number
- **format:** float

reasonCommodities

- **type:** array
- **description:** The distinct set of commodities that were the reason for the action. Not all actions are driven by commodities. So its possible that this can be an empty list.
- **uniqueItems:** True
- – **type:** string

reasonCommodityRelationType

- **type:** string
- **description:** Relation type (bought/sold) of the reason commodity
- **enum:** ['sold', 'bought']

logDBId

- **type:** integer
- **format:** int64

LoggingApiDTO

Description

Model to describe the component logging level

Optional Parameters

componentLoggingLevel

- **type:** object
- **description:** A map from component name to logging level, component could be Discovery, Monitoring, Presentation, Abstraction, Analysis, Extension; logging levels could be INFO, WARN, DEBUG, TRACE
- **additionalProperties:** {'type': 'string', 'enum': ['FATAL', 'ERROR', 'WARN', 'INFO', 'DEBUG', 'TRACE', 'UNKNOWN']}

ManualDynamicConnections

Description

Inherits From

This DTO inherits from [IManualConnectionsData \(on page 386\)](#)

Optional Parameters

dynamicConnectionCriteria

- **type:** array
- **description:** Connection criteria to define dynamically connected entities.
- – [FilterApiDTO \(on page 378\)](#)

ManualEntityDefinitionData

Description

Inherits From

This DTO inherits from [IEntityDefinitionData \(on page 385\)](#)

Required Parameters

manualConnectionData

- **type:** object
- **description:** Entity connections set manually
- **additionalProperties:** {'\$ref': '#/definitions/IManualConnectionsData'}

ManualGroupConnections

Description

Inherits From

This DTO inherits from [IManualConnectionsData \(on page 386\)](#)

Required Parameters

connectedGroup

- **description:** Group for a connection.
- [BaseGroupApiDTO \(on page 334\)](#)

ManualStaticConnections

Description

Inherits From

This DTO inherits from [IManualConnectionsData \(on page 386\)](#)

Optional Parameters

staticConnections

- **type:** array
- **description:** Oids to be statically connected to the created entity
- – **type:** string

MarketApiDTO

Description

Model to describe a Market

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

state

- **type:** string
- **description:** State
- **enum:** ['CREATED', 'READY_TO_START', 'RUNNING', 'COPYING', 'SUCCEEDED', 'STOPPING', 'STOPPED', 'DELETING']

stateProgress

- **type:** integer
- **format:** int32
- **description:** State progress indicated by a percentage, used in RUNNING state

scenario

- **description:** Scenario used to create the Plan, only for Plan Market
- [ScenarioApiDTO \(on page 442\)](#)

saved

- **type:** boolean
- **description:** Shows if a Plan Market is saved

unplacedEntities

- **type:** boolean
- **description:** Unplaced entities, shows if there are entities that could not be placed in the Plan Market

runDate

- **type:** string
- **description:** Shows when a Plan Market started running

runCompleteDate

- **type:** string
- **description:** Shows when a Plan Market was completed

violations

- **type:** array
- **description:** Violations generated in a Plan Market
- – [ServiceEntityApiDTO \(on page 451\)](#)

relatedPlanMarkets

- **type:** array
- **description:** Related Plan Markets generated by particular Scenarios
- – [MarketApiDTO \(on page 396\)](#)

environmentType

- **type:** string
- **description:** Environment type
- **enum:** ['HYBRID', 'CLOUD', 'ONPREM']

planDestination

- **description:** Plan destination where the plan results would be stored, only for Plan Market.
- **BaseApiDTO** ([on page 333](#))

MasterImageEntityAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect](#) ([on page 371](#))

Optional Parameters

displayName

- **type:** string
- **description:** DisplayName of the masterImage used to create new VMs

numVcpus

- **type:** integer
- **format:** int32
- **description:** The number of vCPUs allocated to each VM generated from the master image

mem

- **type:** number
- **format:** float
- **description:** The amount of Mem allocated to each VM generated from the master image

storage

- **type:** number
- **format:** float
- **description:** The amount of Storage allocated to each VM generated from the master image

MaxUtilizationApiDTO

Description

Model to describe a max utilization change in the scenario

Optional Parameters

projectionDay

- **type:** integer
- **format:** int32
- **description:** Projection day, indicate when to apply the change

target

- **description:** Target of the change, entity or group. If empty, assumes global scope
- **BaseApiDTO** ([on page 333](#))

maxPercentage

- **type:** integer
- **format:** int32
- **description:** Max utilization threshold percentage change

selectedEntityType

- **type:** string
- **description:** Type of entity to select in global scope configuration

globalScope

- **type:** boolean

MemberFieldApiDTO

Description

Inherits From

This DTO inherits from [FieldApiDTO](#) ([on page 377](#))

Required Parameters

property

- **type:** string
- **description:** The property of interest.
- **readOnly:** True
- **enum:** ['COUNT']

Optional Parameters

entityType

- **type:** string
- **description:** Restricts the property to entities of this type.
- **readOnly:** True
- **enum:** ['Application', 'ApplicationComponent', 'ApplicationServer', 'AvailabilityZone', 'BusinessAccount', 'BusinessApplication', 'BusinessTransaction', 'BusinessUser', 'Chassis', 'CloudService', 'ComputeTier', 'Container', 'ContainerPod', 'ContainerSpec', 'Database', 'DatabaseServer', 'DatabaseServerTier', 'DatabaseTier', 'DataCenter', 'DesktopPool', 'DiskArray', 'DPod', 'HCIPhysicalMachine', 'HypervisorServer', 'Internet', 'IOModule', 'LoadBalancer', 'LogicalPool', 'Namespace', 'Network', 'PhysicalMachine', 'ProcessorPool', 'Region', 'ReservedInstance', 'Service', 'ServiceProvider', 'Storage', 'StorageController', 'StorageTier', 'Switch', 'Unknown', 'ViewPod', 'VirtualApplication', 'VirtualDataCenter', 'VirtualMachine', 'VirtualVolume', 'VPod', 'WorkloadController', 'ContainerPlatformCluster', 'CloudCommitment', 'ApplicationComponentSpec', 'VirtualMachineSpec']

direct

- **type:** boolean
- **description:** Whether this field refers to direct or indirect members (default = direct).
- **readOnly:** True

MigrateObjectApiDTO

Description

Model to describe a replace change in the scenario

Optional Parameters

projectionDay

- **type:** integer
- **format:** int32
- **description:** Projection day, indicate when to apply the change

source

- **description:** Source of the migration, entity or group - [DEPRECATED - Use: sources]
- [BaseApiDTO \(on page 333\)](#)

destination

- **description:** Destination of the migration - [DEPRECATED - Use: destinations]
- [BaseApiDTO \(on page 333\)](#)

sources

- **type:** array
- **description:** Sources of the migration, entities or groups.
- – [BaseApiDTO \(on page 333\)](#)

destinations

- **type:** array
- **description:** Destinations of the migration, entities or groups.
- – [BaseApiDTO \(on page 333\)](#)

destinationEntityType

- **type:** string
- **description:** Entity type of migration destination, default is VirtualMachine. Case 1, migration source VirtualMachine: destination entity must be VirtualMachine. Case 2, migration source Database Server: destination entity can be VirtualMachine or DatabaseServer.
- **enum:** ['VirtualMachine', 'DatabaseServer']

removeNonMigratingWorkloads

- **type:** boolean
- **description:** If true, remove the existing Virtual Machines, Databases and Database Servers from the scope that are not migrating, so that only the newly migrated entities are included in the plan results.

MultiTextFieldValueApiDTO

Description

Inherits From

This DTO inherits from [FieldValueApiDTO \(on page 377\)](#)

Required Parameters

value

- **type:** array
- **description:** The values associated with the field.
- **readOnly:** True
 - **type:** string

NameValueInputDTO

Description

Deployment Profile provider parameters

Optional Parameters

name

- **type:** string
- **description:** Parameter type. For vCenter, this can be a name or id. For all other target types, this must be an id.
- **enum:** ['name', 'id']

value

- **type:** string

NumberConditionApiDTO

Description

Inherits From

This DTO inherits from [ConditionApiDTO](#) (on page 354)

Required Parameters

value

- **type:** number
- **format:** double
- **description:** Value to compare against.
- **readOnly:** True

NumberFieldValueApiDTO

Description

Inherits From

This DTO inherits from [FieldValueApiDTO](#) (on page 377)

Required Parameters

value

- **type:** number
- **format:** double
- **description:** The value.
- **readOnly:** True

Optional Parameters

units

- **type:** string
- **description:** Units of measurement.
- **readOnly:** True

OnPremResizeActionDetailsApiDTO

Description

Inherits From

This DTO inherits from [ActionDetailsApiDTO \(on page 321\)](#)

Optional Parameters

vcpuBefore

- **type:** integer
- **format:** int32
- **description:** vCPUs before the change

vcpuAfter

- **type:** integer
- **format:** int32
- **description:** vCPUs after the change

socketsBefore

- **type:** integer
- **format:** int32
- **description:** sockets before the change

socketsAfter

- **type:** integer
- **format:** int32
- **description:** sockets after the change

coresPerSocketBefore

- **type:** integer
- **format:** int32
- **description:** cores per socket before the change

coresPerSocketAfter

- **type:** integer
- **format:** int32
- **description:** cores per socket after the change

subType

- **type:** string

OrderByApiDTO

Description

A field to order results by.

Required Parameters

field

- **description:** The field to order by.
- **readOnly:** True
- **FieldApiDTO (on page 377)**

Optional Parameters

ascending

- **type:** boolean
- **description:** Whether the order is ascending (defaults to false).
- **readOnly:** True

PMDiskAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

diskCapacity

- **type:** integer
- **format:** int64
- **description:** Disk Capacity

diskRole

- **type:** string
- **description:** Disk Role
- **enum:** ['CAPACITY', 'CACHE']

PMDiskGroupAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

disks

- **type:** array
- **description:** Disks
- – [PMDiskAspectApiDTO \(on page 404\)](#)

PMEntityAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

diskGroups

- **type:** array
- **description:** Disk Groups
- – [PMDiskGroupAspectApiDTO \(on page 404\)](#)

dedicatedFailoverHost

- **type:** boolean
- **description:** If true, this host is a failover host.

cpuModel

- **type:** string
- **example:** Intel(R) Xeon(R) CPU E5-2670 0 @ 2.60GHz
- **description:** The CPU model of the host

connectedNetworks

- **type:** array
- **example:** Broadcom BCM5708C NetXtreme II GigE
- **description:** Connected Networks
- – **type:** string

automationLevel

- **type:** string
- **example:** Fully Automated
- **description:** Vendor provided automation level
- **enum:** ['FULLY_AUTOMATED', 'PARTIALLY_AUTOMATED', 'NOT_AUTOMATED', 'DISABLED']

migrationLevel

- **type:** string
- **example:** Conservative
- **description:** Vendor provided migration level

machineTypeAndModel

- **type:** string
- **example:** 9040-MR9
- **description:** Machine Type and Model

serialNumber

- **type:** string
- **example:** 130330X
- **description:** Serial Number

totalInstalledPhysicalProcessorUnits

- **type:** integer
- **format:** int32
- **example:** 80
- **description:** Total Installed Physical Processor Units

supportedProcessorCompatibilityModes

- **type:** string
- **example:** POWER7, POWER8, POWER9
- **description:** Supported Processor Compatibility Modes

latestSupportedProcessorGeneration

- **type:** string
- **example:** 9
- **description:** Latest Supported Processor Generation

totalInstalledPhysicalMemory

- **type:** integer
- **format:** int32
- **example:** 4096
- **description:** Total Installed Physical Memory

hypervisorUsedMemory

- **type:** integer
- **format:** int32
- **example:** 4096
- **description:** Hypervisor Used Memory

memoryAssignedToVMs

- **type:** integer
- **format:** int32
- **example:** 4096
- **description:** Memory Assigned To VMs

logicalMemoryBlockSize

- **type:** integer
- **format:** int32
- **example:** 256
- **description:** Logical Memory Block Size

processorPools

- **type:** array
- – **type:** string

PaginationApiDTO

Description

Pagination parameters.

Optional Parameters

orderBy

- **type:** array
- **description:** Order by these fields.
- **readOnly:** True
- – [OrderByApiDTO \(on page 403\)](#)

cursor

- **type:** string
- **description:** Cursor for the next batch.
- **readOnly:** True

limit

- **type:** integer
- **format:** int32
- **description:** Maximum number of records to fetch.
- **readOnly:** True

PatchedTargetDataApiDTO

Description

Model to describe a patched target data.

Required Parameters

patchedFields

- **type:** array
- **description:** Patched target fields.
- – [PatchedTargetFieldApiDTO \(on page 407\)](#)

probeType

- **type:** string
- **description:** Probe type of the patched target.

PatchedTargetFieldApiDTO

Description

Model to describe a field in patched target data.

Optional Parameters

fieldName

- **type:** string
- **description:** Patched field name.

fieldValue

- **type:** string
- **description:** Patched field value.

PeakBaselineApiDTO

Description

Model to describe a peak baseline change in the scenario

Optional Parameters

date

- **type:** string
- **description:** Date of the utilization peak

target

- **description:** Target of the change
- [BaseApiDTO \(on page 333\)](#)

PlacementInfoDTO

Description

Optional Parameters

computeResources

- **type:** array
- **description:** Compute resources that the reservation is placed in
- – [ResourceApiDTO \(on page 437\)](#)

storageResources

- **type:** array
- **description:** Storage resources that the reservation is placed in
- – [ResourceApiDTO \(on page 437\)](#)

networkResources

- **type:** array
- **description:** Network resources that the reservation is placed in
- – [ResourceApiDTO \(on page 437\)](#)

failureInfos

- **type:** array
- **description:** Details about why the reservation failed. This will only be populated if the reservation failed.
- – [ReservationFailureInfoDTO \(on page 432\)](#)

invalidInfo

- **description:** Details about why the reservation is invalid. This will only be populated if the reservation is invalid.
- [ReservationInvalidInfoApiDTO \(on page 433\)](#)

PlacementOptionApiDTO

Description

Model to describe the property of provider options.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

constraintType

- **type:** string
- **description:** constraint type, if a commodity is AccessCommodity, then the class name of that commodity is a constraint type
- **enum:** ['ApplicationCommodity', 'ClusterCommodity', 'DataCenterCommodity', 'DatastoreCommodity etc']

scope

- **description:** scope or placement policy
- [BaseApiDTO \(on page 333\)](#)

target

- **description:** for placement policy, if it's an user placement policy is null.
- [TargetApiDTO \(on page 476\)](#)

numPotentialEntities

- **type:** integer
- **format:** int32
- **description:** example: other VMs, which buys this constraint but not on this host

key

- **type:** string
- **description:** commodity key, this information is needed when trying to retrieve the interaction of providers or consumers

currentEntities

- **type:** array
- **description:** for consumers only. example: VMs, which are currently on this host per constraint they are buying
- [ServiceEntityApiDTO \(on page 451\)](#)

PlacementOptionApiInputDTO

Description

Model to describe the property of provider options.

Optional Parameters

constraintType

- **type:** string
- **description:** constraint type, if a commodity is AccessCommodity, then the class name of that commodity is a constraint type
- **enum:** ['ApplicationCommodity', 'ClusterCommodity', 'DataCenterCommodity', 'DatastoreCommodity etc']

key

- **type:** string
- **description:** commodity key, this information is needed when trying to retrieve the intersection of providers or consumers

PlacementParametersDTO

Description

Required Parameters

count

- **type:** integer
- **format:** int32
- **description:** Number of Virtual Machines to Place

Optional Parameters

templateID

- **type:** string
- **description:** Template Uuid used for the Placement

entityNames

- **type:** array
- **description:** Name of the Placed Virtual Machine
- – **type:** string

constraintIDs

- **type:** array
- **description:** List of uuids that will define the constraints that new VMs should be compliant to, allowed uuids are: Cluster, Datacenter, VirtualDataCenter, Network, Placement Policy. The possible providers are the intersection of all constraints passed.
- **uniqueItems:** True
- – **type:** string

geographicRedundancy

- **type:** boolean
- **description:** Enable Geographic Redundancy

PlanDestinationApiDTO

Description

Model to describe a plan destination. A plan destination is an external destination where plan results can be uploaded.

Required Parameters

businessUnit

- **description:** Business account to plan destination.
- [BaseApiDTO \(on page 333\)](#)

exportDescription

- **type:** string
- **description:** Plan export description message on this plan destination.

exportProgressPercentage

- **type:** integer
- **format:** int32
- **description:** Plan export progress percentage on this plan destination.

exportState

- **type:** string
- **description:** Plan export state on this plan destination.
- **enum:** ['NONE', 'REJECTED', 'IN_PROGRESS', 'SUCCEEDED', 'FAILED']

hasExportedData

- **type:** boolean
- **description:** Boolean, true if this plan destination has uploaded data.

market

- **description:** Plan market currently uploaded to plan destination.
- [BaseApiDTO \(on page 333\)](#)

numErrors

- **type:** integer
- **format:** int32
- **description:** Number of errors on the plan destination.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

PolicyApiDTO

Description

Model to describe a Workload policy, used to manage the entities in the Environment. e.g. Restrict the number of VMs that can use a given datastore, Limit VM mobility by restricting a collection of VMs to a specified cluster or group of hosts, Expand VM mobility by merging a number of clusters, Keep workload running on hosts that have the required licenses

Required Parameters

type

- **type:** string
- **description:** Placement Policy Type
- **enum:** ['AT_MOST_N', 'BIND_TO_GROUP', 'BIND_TO_COMPLEMENTARY_GROUP', 'MUST_RUN_TOGETHER', 'AT_MOST_N_BOUND', 'MERGE', 'BIND_TO_GROUP_AND_LICENSE', 'MUST_NOT_RUN_TOGETHER', 'EXCLUSIVE_BIND_TO_GROUP']

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

name

- **type:** string
- **description:** Name of the policy

enabled

- **type:** boolean
- **description:** Shows if the policy is enabled

capacity

- **type:** integer
- **format:** int32
- **description:** Indicate the max workload entities at the same time per placement entites, used when type is AT_MOST_N_BOUND

commodityType

- **type:** string
- **description:** Commodity type used for the policy

mergeType

- **type:** string
- **description:** Type of Group that is merged, used only when type is MERGE
- **enum:** ['Cluster', 'StorageCluster', 'DataCenter', 'DesktopPool']

consumerGroup

- **description:** Consumer Group, used when type is any but MERGE
- [BaseApiDTO \(on page 333\)](#)

providerGroup

- **description:** Provider Group, used when type is any but MERGE
- [BaseApiDTO \(on page 333\)](#)

mergeGroups

- **type:** array
- **description:** List of Groups to merge, used when type is MERGE
- – [BaseApiDTO \(on page 333\)](#)

providerEntityType

- **type:** string
- **description:** The entity type for the provider. This property is only applicable when policy type is set to MUST_RUN_TOGETHER or MUST_NOT_RUN_TOGETHER. When policy type is set to MUST_RUN_TOGETHER or MUST_NOT_RUN_TOGETHER, this field should be set with type of provider where members of consumer group must run or must not run together on it depending on the policy type.
- **enum:** ['Application', 'ApplicationComponent', 'ApplicationServer', 'AvailabilityZone', 'BusinessAccount', 'BusinessApplication', 'BusinessTransaction', 'BusinessUser', 'Chassis', 'CloudService', 'ComputeTier', 'Container', 'ContainerPod', 'ContainerSpec', 'Database', 'DatabaseServer', 'DatabaseServerTier', 'DatabaseTier', 'DataCenter', 'DesktopPool', 'DiskArray', 'DPod', 'HCIPhysicalMachine', 'HypervisorServer', 'Internet', 'IOModule', 'LoadBalancer', 'LogicalPool', 'Namespace', 'Network', 'PhysicalMachine', 'ProcessorPool', 'Region', 'ReservedInstance', 'Service', 'ServiceProvider', 'Storage', 'StorageController', 'StorageTier', 'Switch', 'Unknown', 'ViewPod', 'VirtualApplication', 'VirtualDataCenter', 'VirtualMachine', 'VirtualVolume', 'VPod', 'WorkloadController', 'ContainerPlatformCluster', 'CloudCommitment', 'ApplicationComponentSpec', 'VirtualMachineSpec']

PolicyApiInputDTO

Description

Model to describe a Placement Policy

Required Parameters

policyName

- **type:** string
- **description:** Name of the policy

type

- **type:** string
- **description:** Placement Policy Type
- **enum:** ['AT_MOST_N', 'BIND_TO_GROUP', 'BIND_TO_COMPLEMENTARY_GROUP', 'MUST_RUN_TOGETHER', 'AT_MOST_N_BOUND', 'MERGE', 'BIND_TO_GROUP_AND_LICENSE', 'MUST_NOT_RUN_TOGETHER', 'EXCLUSIVE_BIND_TO_GROUP']

Optional Parameters

sellerUuid

- **type:** string
- **description:** Uuid of the provider Group in a Placement Policy

buyerUuid

- **type:** string
- **description:** Uuid of the consumer Group in a Placement Policy

mergeUuids

- **type:** array
- **description:** Uuids of the Groups in a Merge Policy
- – **type:** string

mergeType

- **type:** string
- **description:** Group Type in a Merge Policy
- **enum:** ['Cluster', 'StorageCluster', 'DataCenter', 'DesktopPool']

capacity

- **type:** integer
- **format:** int32
- **description:** For an AT_MOST_N or AT_MOST_N_BOUND policy, the number of consumers to allow on a provider entity

enabled

- **type:** boolean
- **description:** Whether to enable the policy

providerEntityType

- **type:** string
- **description:** The entity type for the provider. This property is only applicable when the policy type is set to MUST_RUN_TOGETHER or MUST_NOT_RUN_TOGETHER. This field is set with the provider type (for example, PhysicalMachine) the policy should respect.
- **enum:** ['Application', 'ApplicationComponent', 'ApplicationServer', 'AvailabilityZone', 'BusinessAccount', 'BusinessApplication', 'BusinessTransaction', 'BusinessUser', 'Chassis', 'CloudService', 'ComputeTier', 'Container', 'ContainerPod', 'ContainerSpec', 'Database', 'DatabaseServer', 'DatabaseServerTier', 'DatabaseTier', 'DataCenter', 'DesktopPool', 'DiskArray', 'DPod', 'HCIPhysicalMachine', 'HypervisorServer', 'Internet', 'IOModule', 'LoadBalancer', 'LogicalPool', 'Namespace', 'Network', 'PhysicalMachine', 'ProcessorPool', 'Region', 'ReservedInstance', 'Service', 'ServiceProvider', 'Storage', 'StorageController', 'StorageTier', 'Switch', 'Unknown', 'ViewPod', 'VirtualApplication', 'VirtualDataCenter', 'VirtualMachine', 'VirtualVolume', 'VPod', 'WorkloadController', 'ContainerPlatformCluster', 'CloudCommitment', 'ApplicationComponentSpec', 'VirtualMachineSpec']

PortChannelApiDTO

Description

Model to describe a Port Channel

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

capacity

- **description:** Capacity values
- [StatValueApiDTO \(on page 467\)](#)

values

- **description:** Contains Average, Min, Max, Total
- [StatValueApiDTO \(on page 467\)](#)

units

- **type:** string
- **description:** Units, used for Commodities stats. E.G. \$/h

ports

- **type:** array
- **description:** List of ports in the channel
- – [StatApiDTO \(on page 463\)](#)

filters

- **type:** array
- **description:** describe the grouping options used to generate the output
- – [StatFilterApiDTO \(on page 465\)](#)

PortsAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

portChannels

- **type:** array
- **description:** Port Channels
- – [PortChannelApiDTO \(on page 414\)](#)

ports

- **type:** array
- **description:** Independent ports
- – [StatApiDTO \(on page 463\)](#)

PriceAdjustmentDTO

Description

Optional Parameters

type

- **type:** string
- **enum:** ['DISCOUNT', 'INCREASE']

value

- **type:** number
- **format:** float

PrimitiveFieldApiDTO

Description

Inherits From

This DTO inherits from [FieldApiDTO \(on page 377\)](#)

Required Parameters

fieldName

- **type:** string
- **description:** The name of the primitive field.
- **readOnly:** True

PrintWriter

Description

This is an unspecified object.

ProbeApiDTO

Description

Model to describe a probe.

Required Parameters

category

- **type:** string
- **description:** Probe category.

id

- **type:** integer
- **format:** int64
- **description:** Probe id.

type

- **type:** string
- **description:** Probe type.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

error

- **type:** string
- **description:** Unexpected error while collecting probe information

ProbePropertyApiDTO

Description

Model to describe a probe property

Required Parameters

name

- **type:** string
- **description:** Probe property name.

value

- **type:** string
- **description:** Probe property value.

Optional Parameters

probeld

- **type:** integer
- **format:** int64
- **description:** Probe id.

targetId

- **type:** integer
- **format:** int64
- **description:** Target id.

ProbePropertyNameValuePairApiDTO

Description

Model to describe a name/value pair for probe properties.

Required Parameters

name

- **type:** string
- **description:** Probe property name.

value

- **type:** string
- **description:** Probe property value.

ProductCapabilityDTO

Description

Model to describe Product Capability information.

Optional Parameters

deploymentMode

- **type:** string
- **description:** Deployment mode, affects hiding / showing multiple UI views, options
- **enum:** ['HYBRID_SAAS', 'SAAS', 'SERVER']

searchApiEnabled

- **type:** boolean
- **description:** Controls use of new search api

parkingEnabled

- **type:** boolean
- **description:** Controls hiding/showing parking related pages in UI

jdbcHttpSessionEnabled

- **type:** boolean
- **description:** Controls use of JDBC persistent HTTP Session

reportingEnabled

- **type:** boolean

ProductVersionDTO

Description

Contains version information about the running Turbonomic instance.

Optional Parameters

versionInfo

- **type:** string
- **example:** "versionInfo": "Turbonomic Operations Manager 8.0.1-SNAPSHOT (Build \\20200922092548000\) \"2020-09-22 20:10:04\"\n\naction-orchestrator: 8.0.1-SNAPSHOT\napi: 8.0.1-SNAPSHOT\nauth: 8.0.1-SNAPSHOT\ncost: 8.0.1-SNAPSHOT\nextractor: 8.0.1-SNAPSHOT\n\ngroup: 8.0.1-SNAPSHOT\nhistory: 8.0.1-SNAPSHOT\nmarket: 8.0.1-SNAPSHOT\nmediation-actionscript: 8.0.1-SNAPSHOT\nmediation-appdynamics: 8.0.1-SNAPSHOT\nmediation-appinsights: 8.0.1-SNAPSHOT\nmediation-aws: 8.0.1-SNAPSHOT\nmediation-awsbilling: 8.0.1-SNAPSHOT\nmediation-awscost: 8.0.1-SNAPSHOT\nmediation-azure: 8.0.1-SNAPSHOT\nmediation-azurecost: 8.0.1-SNAPSHOT\nmediation-azureeea: 8.0.1-SNAPSHOT\nmediation-azuresp: 8.0.1-SNAPSHOT\nmediation-azurevolumes: 8.0.1-SNAPSHOT\nmediation-dynatrace: 8.0.1-SNAPSHOT\nmediation-hpe3par: 8.0.1-SNAPSHOT\nmediation-hyperv: 8.0.1-SNAPSHOT\nmediation-netapp: 8.0.1-SNAPSHOT\nmediation-nutanix: 8.0.1-SNAPSHOT\nmediation-oneview: 8.0.1-SNAPSHOT\nmediation-pure: 8.0.1-SNAPSHOT\nmediation-ucs: 8.0.1-SNAPSHOT\nmediation-vcenter: 8.0.1-SNAPSHOT\nmediation-vcenterbrowsing: 8.0.1-SNAPSHOT\nmediation-vmax: 8.0.1-SNAPSHOT\nmediation-vmm: 8.0.1-SNAPSHOT\nplan-orchestrator: 8.0.1-SNAPSHOT\nrepository: 8.0.1-SNAPSHOT\ntopology-processor: 8.0.1-SNAPSHOT"
- **description:** A multi-line string describing the version information, including that of the various internal components.

version

- **type:** string
- **example:** 8.0.1-SNAPSHOT
- **description:** The Operations Manager product version, including major and minor versions

build

- **type:** string
- **example:** 20200922211058775
- **description:** The build number associated with this deployment.

commit

- **type:** string
- **example:** 1183dd2
- **description:** The commit associated with this deployment.

branch

- **type:** string
- **example:** 8.0.1
- **description:** The branch associated with this deployment.

gitDescription

- **type:** string
- **example:** 1183dd2bb8ebca3dbcaf708e0c323cab7b8e352
- **description:** Specific source control information associated with this deployment.

updates

- **type:** string
- **description:** Description of available updates--not yet implemented in XL.

marketVersion

- **type:** integer
- **format:** int32
- **example:** 2
- **description:** The version of the market

apiVersion

- **type:** string
- **example:** 3.1
- **description:** The version of the REST API.

PurchaseProfileDTO

Description

Model to describe a set of preferences for purchasing RIs

Required Parameters

cloudType

- **type:** string
- **description:** Cloud type
- **enum:** ['AWS', 'AZURE', 'GCP', 'HYBRID', 'UNKNOWN']

paymentOption

- **type:** string
- **description:** Preferred payment option
- **enum:** ['ALL_UPFRONT', 'PARTIAL_UPFRONT', 'NO_UPFRONT']

reservedInstanceType

- **type:** string
- **description:** Preferred offering class (Standard or Convertible)
- **enum:** ['STANDARD', 'CONVERTIBLE']

termYears

- **type:** integer
- **format:** int32
- **description:** Number of years in preferred term

QueryInputApiDTO

Description

Model to describe an input query

Required Parameters

query

- **type:** string
- **description:** Query string. The format of this depends on the QueryType chosen. For example, for a REGEX QueryType, this should be a regular expression.

type

- **type:** string
- **description:** Query type
- **enum:** ['EXACT', 'REGEX', 'CONTAINS']

Optional Parameters

caseSensitive

- **type:** boolean
- **description:** If true, the query string will match case-sensitivity. This field is only used when QueryType is not REGEX.

RIBuyActionDetailsApiDTO

Description

Inherits From

This DTO inherits from [ActionDetailsApiDTO](#) (on page 321)

Optional Parameters

estimatedOnDemandCost

- **type:** number
- **format:** float

estimatedRICoverage

- **type:** number
- **format:** float

historicalDemandDataset

- **type:** array
- – [StatSnapshotApiDTO \(on page 467\)](#)

subType

- **type:** string

RIPurchaseProfilesSettingApiDTO

Description

Inherits From

This DTO inherits from [SettingApiDTO \(on page 458\)](#)

Required Parameters

value

- **description:** Value of the RI Purchase Profiles of type ReservedInstancePurchaseSettingsDTO.
- [ReservedInstancePurchaseSettingsDTO \(on page 436\)](#)

Optional Parameters

defaultValue

- **description:** Default value before any change
- **readOnly:** True
- [ReservedInstancePurchaseSettingsDTO \(on page 436\)](#)

RangeApiDTO

Description

Model to describe the Range of a Value in the Settings

Optional Parameters

step

- **type:** number
- **format:** double
- **description:** The Step scale factor of the slider

labels

- **type:** array
- **description:** Labels to show in the values of the slider
- – **type:** string

customStepValues

- **type:** array
- **description:** Custom step values when the slider step is not constant - [DEPRECATED - Use: stepValues]
- - **type:** integer
 - **format:** int32

stepValues

- **type:** array
- **description:** Custom step values when the slider step is not constant
- - **type:** number
 - **format:** float

RangeInputApiDTO

Description

Model to describe an input range. Either minValue or maxValue needs to be defined.

Optional Parameters

minValue

- **type:** number
- **format:** float
- **description:** Minimum value of the input range

maxValue

- **type:** number
- **format:** float
- **description:** Maximum value of the input range

RateCardApiDTO

Description

Model to describe a ratecard.

Required Parameters

info

- **description:** List of business unit UUID's related to this rate card.
- [RateCardInfoApiDTO \(on page 424\)](#)

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

type

- **type:** string
- **description:** Type of rate card", example = "AWS, Azure"
- **enum:** ['AWS', 'AZURE', 'GCP', 'HYBRID', 'UNKNOWN']

related

- **description:** List of business units related to this rate card.
- [RateCardRelatedApiDTO \(on page 424\)](#)

validation

- **description:** Rate card validation.
- [RateCardValidationApiDTO \(on page 425\)](#)

valid

- **type:** boolean

default

- **type:** boolean

fileName

- **type:** string

RateCardInfoApiDTO

Description

Model to describe the attributes of a rate card.

Required Parameters

businessUnitIds

- **type:** array
- **description:** List of business units associated to this rate card.
- – **type:** string

RateCardRelatedApiDTO

Description

Model to describe the related business units of this ratecard.

Optional Parameters

businessUnits

- **type:** array
- **description:** List of business units related to the ratecard
- – [BusinessUnitApiDTO \(on page 337\)](#)

RateCardValidationApiDTO

Description

Model to validate the RateCard

Optional Parameters

name

- **type:** string
- **description:** Name of the rate card file

status

- **type:** string
- **example:** VALID, INVALID
- **description:** Validation Status
- **enum:** ['VALID', 'INVALID']

message

- **type:** string
- **example:** Validation was successful, Validation failed
- **description:** Reason for validation failure or success.

Recommendation

Description

A DTO for a single recommendation to an error.

Required Parameters

description

- **type:** string
- **description:** The recommended user action to investigate/mitigate the problem.

errorType

- **type:** string
- **description:** The problem this recommendation is produced for.

ReconfigureActionDetailsApiDTO

Description

Inherits From

This DTO inherits from [ActionDetailsApiDTO](#) (on page 321)

Optional Parameters

vcpuBefore

- **type:** integer
- **format:** int32
- **description:** vCPUs before the change

vcpuAfter

- **type:** integer
- **format:** int32
- **description:** vCPUs after the change

socketsBefore

- **type:** integer
- **format:** int32
- **description:** sockets before the change

socketsAfter

- **type:** integer
- **format:** int32
- **description:** sockets after the change

coresPerSocketBefore

- **type:** integer
- **format:** int32
- **description:** cores per socket before the change

coresPerSocketAfter

- **type:** integer
- **format:** int32
- **description:** cores per socket after the change

RecurrenceApiDTO

Description

Model to describe the Schedule for a Settings Policy

Required Parameters

type

- **type:** string
- **description:** Type of the recurrence, Enum: DAILY, WEEKLY, MONTHLY
- **enum:** ['DAILY', 'WEEKLY', 'MONTHLY']

Optional Parameters

daysOfWeek

- **type:** array
- **description:** The day of week that the recurrence will occur. Required if the type of recurrence is WEEKLY, or if the type is MONTHLY and a week for the monthly recurrence has been set.
 - **type:** string
 - **enum:** ['Sun', 'Mon', 'Tue', 'Wed', 'Thu', 'Fri', 'Sat']

daysOfMonth

- **type:** array
- **description:** When recurrence type is MONTHLY, the date to apply the monthly recurrence
 - **type:** integer
 - **format:** int32

weekOfTheMonth

- **type:** array
- **description:** When recurrence type is MONTHLY, which week of the month to apply the recurrence. A value of -1 indicates last week, 0 indicates this week, and so on.
 - **type:** integer
 - **format:** int32

interval

- **type:** integer
- **format:** int32
- **description:** Frequency of the recurrence based on the recurrence type. For example, an interval of '2' with a recurrence type of MONTHLY will occur every two months.

RegionAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

latitude

- **type:** number
- **format:** double
- **description:** The latitude of the region used along with longitude to determine physical location.

longitude

- **type:** number
- **format:** double
- **description:** The longitude of the region used along with latitude to determine physical location.

numWorkloads

- **type:** integer
- **format:** int32
- **description:** Number of workloads (VMs, databases, etc.) in this region.

RelatedActionApiDTO

Description

Model to describe the relationship between two actions

Optional Parameters

action

- **description:** The basic action DTO for the related action
- [BasicActionApiDTO \(on page 334\)](#)

actionRelationType

- **type:** string
- **description:** Action relation type
- **enum:** ['BLOCKED_BY', 'BLOCKING', 'CAUSED_BY', 'CAUSING']

RelatedEntityFieldApiDTO

Description

Inherits From

This DTO inherits from [FieldApiDTO \(on page 377\)](#)

Required Parameters

property

- **type:** string
- **description:** The related entity property of interest.
- **readOnly:** True
- **enum:** ['NAMES', 'COUNT']

relatedEntityType

- **type:** string
- **description:** The type of related entities of interest.
- **readOnly:** True
- **enum:** ['Application', 'ApplicationComponent', 'ApplicationServer', 'AvailabilityZone', 'BusinessAccount', 'BusinessApplication', 'BusinessTransaction', 'BusinessUser', 'Chassis', 'CloudService', 'ComputeTier', 'Container', 'ContainerPod', 'ContainerSpec', 'Database', 'DatabaseServer', 'DatabaseServerTier', 'DatabaseTier', 'DataCenter', 'DesktopPool', 'DiskArray', 'DPod', 'HCIPhysicalMachine', 'HypervisorServer', 'Internet', 'IOModule', 'LoadBalancer', 'LogicalPool', 'Namespace', 'Network', 'PhysicalMachine', 'ProcessorPool', 'Region', 'ReservedInstance', 'Service', 'ServiceProvider', 'Storage', 'StorageController', 'StorageTier', 'Switch', 'Unknown', 'ViewPod', 'VirtualApplication', 'VirtualDataCenter', 'VirtualMachine', 'VirtualVolume', 'VPod', 'WorkloadController', 'ContainerPlatformCluster', 'CloudCommitment', 'ApplicationComponentSpec', 'VirtualMachineSpec']

RelatedGroupFieldApiDTO

Description

Inherits From

This DTO inherits from [FieldApiDTO \(on page 377\)](#)

Required Parameters

property

- **type:** string
- **description:** The related group property of interest.
- **readOnly:** True
- **enum:** ['NAMES', 'COUNT']

relatedGroupType

- **type:** string
- **description:** The type of related groups of interest.
- **readOnly:** True
- **enum:** ['Group', 'Resource', 'Cluster', 'VMCluster', 'StorageCluster', 'BillingFamily', 'NodePool']

RelievePressureObjectApiDTO

Description

Model to describe a relieve pressure change in the scenario: minimum amount of Actions Moves that will relieve the pressure on the over-utilized clusters

Optional Parameters

projectionDay

- **type:** integer
- **format:** int32
- **description:** Projection day, indicate when to apply the change

sources

- **type:** array
- **description:** Sources of the change, List of Clusters that are overloaded
 - [BaseApiDTO \(on page 333\)](#)

destinations

- **type:** array
- **description:** Destinations of the change, List of Clusters where VMs can move to
 - [BaseApiDTO \(on page 333\)](#)

RemoveConstraintApiDTO

Description

Model to describe a constraint change in the scenario

Optional Parameters

constraintType

- **type:** string
- **description:** Type of the constraint to remove. To ignore all constraints - use AllCommodities. This will ignore all constraints not just Network/Cluster/StorageCluster/DC. GlobalIgnoreConstraint - deprecated - use AllCommodities instead.
- **enum:** ['DataCenterCommodity', 'ClusterCommodity', 'NetworkCommodity', 'DatastoreCommodity', 'StorageClusterCommodity', 'GlobalIgnoreConstraint', 'AllCommodities']

projectionDay

- **type:** integer
- **format:** int32
- **description:** Projection day, indicate when to apply the change

target

- **description:** Target of the change, when not provided change applied to plan scope
- [BaseApiDTO \(on page 333\)](#)

targetEntityType

- **type:** string
- **description:** EntityType to target with constraint configuration
- **enum:** ['VirtualMachine', 'Container', 'ContainerPod']

RemoveObjectApiDTO

Description

Model to describe a remove change in the scenario

Optional Parameters

projectionDay

- **type:** integer
- **format:** int32
- **description:** Projection day, indicate when to apply the change

targetEntityType

- **type:** string
- **description:** Type of entity to remove from group target

target

- **description:** Target of the change, entity or group
- [BaseApiDTO \(on page 333\)](#)

ReplaceObjectApiDTO

Description

Model to describe a migration change in the scenario

Optional Parameters

projectionDay

- **type:** integer
- **format:** int32
- **description:** Projection day, indicate when to apply the change

target

- **description:** Target of the change, entity or group
- [BaseApiDTO \(on page 333\)](#)

template

- **description:** Template used for the replace
- [BaseApiDTO \(on page 333\)](#)

targetEntityType

- **type:** string
- **description:** Type of entity to remove from group target

ReservationConstraintApiDTO

Description

The constraints user specified when running reservation which limit where templates could be placed.

Required Parameters

constraintType

- **type:** string
- **description:** Type of constraint
- **enum:** ['CLUSTER', 'DATA_CENTER', 'VIRTUAL_DATA_CENTER', 'POLICY', 'NETWORK']

uuid

- **type:** string
- **description:** UUID of the constraint

Optional Parameters

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

ReservationFailureInfoDTO

Description

Failure information when reservation fails

Required Parameters

closestSeller

- **description:** provider that came closest to meeting the requirements
- [BaseApiDTO \(on page 333\)](#)

closestSellerCluster

- **description:** Closest provider's cluster information
- [BaseApiDTO \(on page 333\)](#)

maxQuantityAvailable

- **type:** number
- **format:** double
- **description:** Quantity of resource available on closestSeller

quantityRequested

- **type:** number
- **format:** double
- **description:** Quantity of resource requested

resource

- **type:** string
- **description:** Most constrained resource

timespan

- **type:** string
- **description:** Failure is in historical or current
- **enum:** ['HISTORICAL', 'CURRENT', 'PROJECTED', 'PLAN_SOURCE', 'PLAN_PROJECTED']

Optional Parameters

units

- **type:** string
- **description:** Units for the resource

ReservationInvalidInfoApiDTO

Description

The reason the reservation is invalid

Optional Parameters

invalidReason

- **type:** string
- **description:** The reason why the reservation is invalid
- **enum:** ['MARKET_CONNECTIVITY_ERROR', 'MARKET_NOT_READY', 'INVALID_CONSTRAINTS']

ReservedInstanceApiDTO

Description

Model to describe a Reserved Instance

Required Parameters

cloudType

- **type:** string
- **description:** Cloud Type
- **enum:** ['AWS', 'AZURE', 'GCP', 'HYBRID', 'UNKNOWN']

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

template

- **description:** Related template
- [BaseApiDTO \(on page 333\)](#)

platform

- **type:** string
- **description:** Platform name
- **enum:** ['UNKNOWN', 'LINUX', 'RHEL', 'SUSE', 'WINDOWS', 'WINDOWS_WITH_SQL_STANDARD', 'WINDOWS_WITH_SQL_WEB', 'WINDOWS_WITH_SQL_SERVER_ENTERPRISE', 'LINUX_WITH_SQL_STANDARD', 'LINUX_WITH_SQL_WEB', 'LINUX_WITH_SQL_SERVER_ENTERPRISE']

type

- **type:** string
- **description:** Reserved instance type
- **enum:** ['STANDARD', 'CONVERTIBLE']

location

- **description:** Location, either a zone or a data center if zone is not available
- [BaseApiDTO \(on page 333\)](#)

accountId

- **type:** string
- **description:** Account ID

accountDisplayName

- **type:** string
- **description:** Account display name

targetId

- **type:** string
- **description:** The associated target ID of the account

masterAccountId

- **type:** string
- **description:** Master account ID

term

- **description:** Term, unit is Year
- [StatApiDTO \(on page 463\)](#)

payment

- **type:** string
- **description:** Payment option
- **enum:** ['ALL_UPFRONT', 'PARTIAL_UPFRONT', 'NO_UPFRONT']

onDemandPrice

- **description:** On-demand price, saving is RI price minus on-demand price
- [StatApiDTO \(on page 463\)](#)

costPrice

- **description:** Total monthly cost
- [StatApiDTO \(on page 463\)](#)

coupons

- **description:** Total coupons and used coupons, utilization = numOfCouponsUsed / numOfCoupons
- [StatApiDTO \(on page 463\)](#)

totalCoupons

- **type:** number
- **format:** float
- **description:** Total coupons provided by the cbtp the vm matched with

expDate

- **type:** string
- **description:** Expiration date

instanceCount

- **type:** integer
- **format:** int32
- **description:** Number of reserved instance with the same type, template, platform etc..

tenancy

- **type:** string
- **description:** Tenancy
- **enum:** ['DEFAULT', 'DEDICATED', 'HOST']

upFrontCost

- **type:** number
- **format:** double
- **description:** Up front cost

actualHourlyCost

- **type:** number
- **format:** double
- **description:** Actual hourly cost

effectiveHourlyCost

- **type:** number
- **format:** double
- **description:** Effective hourly cost

isExpired

- **type:** boolean
- **description:** Whether the RI be expired by a date provided

expDateEpochTime

- **type:** integer
- **format:** int64
- **description:** Expiration Date in epoch time

scopeType

- **type:** string
- **description:** Whether the RI scope is Single or Shared (Azure)
- **enum:** ['SINGLE', 'SHARED', 'UNKNOWN']

appliedScopes

- **type:** array
- **description:** List of applied scope UUIDs- only provided when scope is Single (Azure)
- – **type:** string

orderID

- **type:** string
- **description:** The Order ID of the RI (Azure)

trueID

- **type:** string
- **description:** The ID of the RI

coveredEntityCount

- **type:** integer
- **format:** int32
- **description:** Count of workload entities covered by the reserved instance

undiscoveredAccountsCoveredCount

- **type:** integer
- **format:** int32
- **description:** Count of undiscovered accounts covered by the reserved instance

sizeFlexible

- **type:** boolean

toBuy

- **type:** boolean

ReservedInstancePurchaseSettingsDTO

Description

Optional Parameters

awsProfile

- [PurchaseProfileDTO \(on page 420\)](#)

azureProfile

- [PurchaseProfileDTO \(on page 420\)](#)

ResizeActionDetailsApiDTO

Description

Parent class for resize action details. Implementing classes include: CloudResizeActionDetailsApiDTO.

Required Parameters

actionDetailType

- **type:** string

actionType

- **type:** string

Optional Parameters

subType

- **type:** string

ResourceApiDTO

Description

Model to describe the Resources of a Template

Optional Parameters

stats

- **type:** array
- **description:** Statistics, e.g. Number of CPU, Memory size, Disk size, ...
- – [StatApiDTO \(on page 463\)](#)

provider

- **description:** Entity provider
- [BaseApiDTO \(on page 333\)](#)

type

- **type:** string
- **description:** Type of the resource

template

- **type:** string
- **description:** Template used to fulfill the resources

relatedResources

- **type:** array
- **description:** ID of resources related to this resource
- – **type:** string

linkedResources

- **type:** array
- **description:** resources related to this resource. For now, this will only contain the cluster
- – [BaseApiDTO \(on page 333\)](#)

ResourceGroupApiDTO

Description

Inherits From

This DTO inherits from [GroupApiDTO \(on page 379\)](#)

Optional Parameters

parentUuid

- **type:** string
- **description:** Parent Business Account uuid (e.g subscription in Azure) where the Resource Group belongs to.

parentDisplayName

- **type:** string
- **description:** Parent Business Account display name (e.g subscription in Azure) where the Resource Group belongs to.

RoleApiDTO

Description

Model to describe a User Role, it describe the permissions of an user over the Ops. Manager capabilities

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

name

- **type:** string
- **description:** Name of the role

SAMLIdpApiDTO

Description

Model to describe an SAML IDP. It contains IDP URL and is SAML ONLY enabled or not.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

idpURL

- **type:** string
- **description:** The SAML IDP URL

isSingleLogoutEnabled

- **type:** boolean

isSAMLOnly

- **type:** boolean

STEntityAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

displayName

- **type:** string
- **description:** Display Name

name

- **type:** string
- **description:** Name

productName

- **type:** string
- **description:** Product Name

productType

- **type:** string
- **description:** Product Type

deviceId

- **type:** string
- **description:** Device ID

deviceName

- **type:** string
- **description:** Device Name

externalNames

- **type:** array
- **description:** External Names
- – **type:** string

altName

- **type:** string
- **description:** Alternative Name

ssdDiskCount

- **type:** integer
- **format:** int64
- **description:** SSD Disk Count

rpm7200DiskCount

- **type:** integer
- **format:** int64
- **description:** RPM 7200 Disk Count

rpm10KDiskCount

- **type:** integer
- **format:** int64
- **description:** RPM 10K Disk Count

rpm15KDiskCount

- **type:** integer
- **format:** int64
- **description:** RPM 15K Disk Count

getvSeriesDiskCount

- **type:** integer
- **format:** int64
- **description:** VSeries Disk Count

ssdDiskIOPSCapacity

- **type:** number
- **format:** double
- **description:** SSD Disk IOPS Capacity

rpm7200DiskIOPSCapacity

- **type:** number
- **format:** double
- **description:** RPM 7200 Disk IOPS Capacity

rpm10KDiskIOPSCapacity

- **type:** number
- **format:** double
- **description:** RPM 10K Disk IOPS Capacity

rpm15KDiskIOPSCapacity

- **type:** number
- **format:** double
- **description:** RPM 15K Disk IOPS Capacity

getvSeriesDiskIOPSCapacity

- **type:** number
- **format:** double
- **description:** VSeries Disk IOPS Capacity

technologyType

- **type:** string
- **description:** HCI Technology Type

rawCapacity

- **type:** integer
- **format:** int64
- **description:** HCI Raw Capacity

rawFreespace

- **type:** integer
- **format:** int64
- **description:** HCI Raw Freespace

rawUncommitted

- **type:** integer
- **format:** int64
- **description:** HCI Raw Uncommitted

redundancyMethod

- **type:** string
- **description:** HCI Redundancy Method

failuresToTolerate

- **type:** integer
- **format:** int32
- **description:** HCI Failures To Tolerate

spaceReservationPct

- **type:** integer
- **format:** int32
- **description:** HCI Space Reservation Percentage

ScenarioApiDTO

Description

Model to describe a What-If Scenario, composed by a list of changes

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

owners

- **type:** array
- **description:** Users that owns the scenario
 - [UserApiDTO \(on page 491\)](#)

type

- **type:** string
- **description:** Type of the scenario

scope

- **type:** array
- **description:** List of entities/group that define the Scope
 - [BaseApiDTO \(on page 333\)](#)

projectionDays

- **type:** array
- **description:** List of days that define when the scenario should run
 - **type:** integer
 - **format:** int32

topologyChanges

- **description:** Changes to apply to the topology of the plan market
- [TopologyChangesApiDTO \(on page 488\)](#)

loadChanges

- **description:** Workload utilization changes in the scenario
- [LoadChangesApiDTO \(on page 391\)](#)

configChanges

- **description:** Configuration changes in the scenario
- [ConfigChangesApiDTO \(on page 354\)](#)

changes

- **type:** array
- **description:** List of changes that describe the Scenario - [DEPRECATED - EOL: 8.9.1 - Use: loadChanges, configChanges]
- – [ScenarioChangeApiDTO \(on page 443\)](#)

timebasedTopologyChanges

- [TimeBasedTopologyChangesApiDTO \(on page 487\)](#)

ScenarioChangeApiDTO

Description

Model to describe a change in the Scenario, e.g. Add/Remove/Replace entities, change utilization, Add/Remove workload policies - [DEPRECATED - EOL: 8.9.1]

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

index

- **type:** integer
- **format:** int32
- **description:** Index used to identify a change, used on remove

type

- **type:** string
- **description:** Type
- **enum:** ['ADDED', 'REMOVED', 'REPLACED', 'CONSTRAINTCHANGED', 'DISABLED', 'ENABLED', 'SET', 'ADD_HIST', 'INCLUDE_RESERVED', 'SET_HIST_BASELINE', 'SET_PEAK_BASELINE', 'SET_USED', 'SET_UTILIZATION', 'SET_ACTION_SETTING', 'SET_WORKLOAD_PLACEMENT', 'SET_MAX_UTILIZATION']

description

- **type:** string
- **description:** Description, e.g. Added n entities, Removed workload policy

mergeType

- **type:** string
- **description:** Merge type, used when type is SET_WORKLOAD_PLACEMENT
- **enum:** ['Cluster', 'StorageCluster', 'Datacenter', 'DesktopPool']

targets

- **type:** array
- **description:** List of Entities/Groups affected by the change
- – [BaseApiDTO \(on page 333\)](#)

value

- **type:** string
- **description:** if type ADDED: count to add, if SET_USED: percentage of util to increment/decrement, if SET_UTILIZATION: max percentage of utilization, if SET_HIST_BASELINE: time when to load the baseline, if SET_PEAK_BASELINE: time when to load the peak baseline, if CONSTRAINTCHANGED: true/false, if SET_WORKLOAD_PLACEMENT: ADDED, ENABLED, DISABLED, REMOVED

enable

- **type:** boolean
- **description:** used when type ADD_HIST, INCLUDE_RESERVED, ENABLE, DISABLED

capacity

- **type:** number
- **format:** float
- **description:** Indicate the max workload entities at the same time per placement entites, used when type is SET_WORKLOAD_PLACEMENT and policyType AT_MOST_N_BOUND

center

- **type:** number
- **format:** float
- **description:** Percentage of the Desired state Center, used when type is SET

diameter

- **type:** number
- **format:** float
- **description:** Percentage of the Desired state Diameter, used when type is SET

name

- **type:** string
- **description:** if type SET_WORKLOAD_PLACEMENT: policy name, if CONSTRAINTCHANGED: commodity name (All, DataCenterCommodity, ClusterCommodity, NetworkCommodity, DatastoreCommodity, StorageClusterCommodity, GlobalIgnoreConstraint)

maxUtilType

- **type:** string
- **description:** Type of the commodity, used when type is SET_MAX_UTILIZATION

policyType

- **type:** string
- **description:** Type of the policy
- **enum:** ['AT_MOST_N', 'BIND_TO_GROUP', 'BIND_TO_COMPLEMENTARY_GROUP', 'MUST_RUN_TOGETHER', 'AT_MOST_N_BOUND', 'MERGE', 'BIND_TO_GROUP_AND_LICENSE']

scope

- **type:** array
- **description:** List of entities/groups to describe the Scope of the Scenario
- – [BaseApiDTO \(on page 333\)](#)

projectionDays

- **type:** array
- **description:** List of projection days periods, indicate when to run the Plan Markets
- - **type:** integer
 - **format:** int32

ScheduleApiDTO

Description

Model to describe the Schedule for a Settings Policy

Required Parameters

endTime

- **type:** string
- **format:** date-time
- **example:** 2019-04-04T19:15
- **description:** End time in hours and minutes for the scheduled period in ISO8601. For example, 2019-04-04T19:15

startDate

- **type:** string
- **format:** date-time
- **example:** 2019-04-04T19:15
- **description:** Start date of the schedule period, expressed using ISO8601 Format (YYYY-MM-DDTHH:MM:SS). This date is local to the timezone of the instance.

startTime

- **type:** string
- **format:** date-time
- **example:** 2019-04-04T19:15
- **description:** Start time in hours and minutes for the scheduled period in ISO8601. For example, 2019-04-04T17:15

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

endDate

- **type:** string
- **format:** date
- **example:** 2019-04-04
- **description:** End date of the schedule period, expressed using ISO8601 Format (YYYY-MM-DDTHH:MM:SS). This date is local to the timezone of the instance.

recurrence

- **description:** Recurrence setup
- [RecurrenceApiDTO \(on page 426\)](#)

timeZone

- **type:** string
- **description:** The time zone name based on tz database

nextOccurrence

- **type:** string
- **description:** The date and time of the next occurrence of this schedule represented in ISO8601 local time (YYYY-MM-DDTHH:MM:SS). For example, 2019-04-04T19:15

nextOccurrenceTimestamp

- **type:** integer
- **format:** int64
- **description:** The date and time of the next occurrence of this schedule represented in Timestamp in milliseconds. For example, 1562100619000

remaingTimeActiveInMs

- **type:** integer
- **format:** int64
- **description:** The amount of time that the schedule is going to be active at the time of call in milliseconds. This field will not be populated if the schedule is not currently active.

ScheduleEntityResponseApiDTO

Description

represents a response of the attach/detach time span schedule to/from the suspendable entity

Optional Parameters

error

- **type:** string
- **example:** entityUuid not found
- **description:** error indicating the reason for failure

entityUUID

- **type:** string

ScheduleItemApiDTO

Description

Base model to describe a ScheduleItem.

Required Parameters

type

- **type:** string
- **example:** SuspendItemApiDTO
- **description:** ScheduleItem type discriminator. Describes which subclass of ScheduleItem is returned.

ScheduleTimeSpansApiDTO

Description

Suspension time span schedule

Required Parameters

timeZone

- **type:** string
- **example:** America/New_York
- **description:** Timezone for the time spans in this schedule. Should be chosen from the IANA Timezone Database here: [<https://www.iana.org/time-zones>]. See the list in wikipedia here: [https://en.wikipedia.org/wiki/List_of_tz_database_time_zones]

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

description

- **type:** string
- **example:** Up 7-5 on weekdays
- **description:** Description of the schedule

timeSpans

- **description:** Weekly schedule time spans
- [TimeSpanGroupApiDTO \(on page 488\)](#)

ScopeUuidsApiInputDTO

Description

Model to describe the request by UUIDs

Required Parameters

uuids

- **type:** array
- **description:** List of uuids
- – **type:** string
- **maxItems:** 2147483647
- **minItems:** 1

Optional Parameters

marketId

- **type:** string
- **description:** Market ID associated with the requested items

SearchAllQueryApiDTO

Description

A query used to search across the entire topology (entities and groups)

Required Parameters

select

- **description:** Defines what subset of types (entities and groups) should be returned.
- **readOnly:** True
- [SelectAllApiDTO \(on page 449\)](#)

where

- **description:** Conditions that each retrieved object must satisfy (currently only name is supported).
- **readOnly:** True
- [WhereApiDTO \(on page 499\)](#)

Optional Parameters

pagination

- **description:** Pagination information.
- **readOnly:** True
- [PaginationApiDTO \(on page 406\)](#)

SearchCountRecordApiDTO

Description

A count of entities.

Required Parameters

count

- **type:** integer
- **format:** int32
- **description:** Count of entities.
- **readOnly:** True

groupBys

- **type:** array
- **description:** List of fields describing the groupBys that this count represents
- **readOnly:** True
- – [FieldValueApiDTO \(on page 377\)](#)

SearchQueryRecordApiDTO

Description

A record with information about an entity or a group.

Required Parameters

oid

- **type:** integer
- **format:** int64
- **description:** Unique identifier for the entity or group.
- **readOnly:** True

values

- **type:** array
- **description:** Information about the entity or group.
- **readOnly:** True
- – [FieldValueApiDTO \(on page 377\)](#)

SelectAllApiDTO

Description

Specification of what subset of types (entities and groups) should be returned.

Optional Parameters

entityTypes

- **type:** array
- **description:** Entity types to include in the response.
- **readOnly:** True
- - **type:** string
 - **enum:** ['Application', 'ApplicationComponent', 'ApplicationServer', 'AvailabilityZone', 'BusinessAccount', 'BusinessApplication', 'BusinessTransaction', 'BusinessUser', 'Chassis', 'CloudService', 'ComputeTier', 'Container', 'ContainerPod', 'ContainerSpec', 'Database', 'DatabaseServer', 'DatabaseServerTier', 'DatabaseTier', 'DataCenter', 'DesktopPool', 'DiskArray', 'DPod', 'HCIPhysicalMachine', 'HypervisorServer', 'Internet', 'IOModule', 'LoadBalancer', 'LogicalPool', 'Namespace', 'Network', 'PhysicalMachine', 'ProcessorPool', 'Region', 'ReservedInstance', 'Service', 'ServiceProvider', 'Storage', 'StorageController', 'StorageTier', 'Switch', 'Unknown', 'ViewPod', 'VirtualApplication', 'VirtualDataCenter', 'VirtualMachine', 'VirtualVolume', 'VPod', 'WorkloadController', 'ContainerPlatformCluster', 'CloudCommitment', 'ApplicationComponentSpec', 'VirtualMachineSpec']

groupTypes

- **type:** array
- **description:** Group types to include in the response.
- **readOnly:** True
- - **type:** string
 - **enum:** ['Group', 'Resource', 'Cluster', 'VMCluster', 'StorageCluster', 'BillingFamily', 'NodePool']

SelectEntityApiDTO

Description

Specification of what fields should be fetched in an entity search response.

Required Parameters

entityType

- **type:** string
- **description:** Entity Type
- **readOnly:** True
- **enum:** ['Application', 'ApplicationComponent', 'ApplicationServer', 'AvailabilityZone', 'BusinessAccount', 'BusinessApplication', 'BusinessTransaction', 'BusinessUser', 'Chassis', 'CloudService', 'ComputeTier', 'Container', 'ContainerPod', 'ContainerSpec', 'Database', 'DatabaseServer', 'DatabaseServerTier', 'DatabaseTier', 'DataCenter', 'DesktopPool', 'DiskArray', 'DPod', 'HCIPhysicalMachine', 'HypervisorServer', 'Internet', 'IOModule', 'LoadBalancer', 'LogicalPool', 'Namespace', 'Network', 'PhysicalMachine', 'ProcessorPool', 'Region', 'ReservedInstance', 'Service', 'ServiceProvider', 'Storage', 'StorageController', 'StorageTier', 'Switch', 'Unknown', 'ViewPod', 'VirtualApplication', 'VirtualDataCenter', 'VirtualMachine', 'VirtualVolume', 'VPod', 'WorkloadController', 'ContainerPlatformCluster', 'CloudCommitment', 'ApplicationComponentSpec', 'VirtualMachineSpec']

Optional Parameters

fields

- **type:** array
- **description:** Fields to fetch.
- **readOnly:** True
- – [FieldApiDTO \(on page 377\)](#)

SelectGroupApiDTO

Description

Specification of what fields should be fetched in a group search response.

Required Parameters

groupType

- **type:** string
- **description:** Group Type.
- **readOnly:** True
- **enum:** ['Group', 'Resource', 'Cluster', 'VMCluster', 'StorageCluster', 'BillingFamily', 'NodePool']

Optional Parameters

fields

- **type:** array
- **description:** Fields to fetch.
- **readOnly:** True
- – [FieldApiDTO \(on page 377\)](#)

ServiceEntityApiDTO

Description

Model to describe an Entity, e.g. Virtual Machine, Physical Machine, Storage

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

environmentType

- **type:** string
- **description:** Environment type
- **enum:** ['CLOUD', 'ONPREM', 'HYBRID']

discoveredBy

- **description:** Target that discovered the entity
- [TargetApiDTO \(on page 476\)](#)

vendorIds

- **type:** object
- **description:** The mapping of target identifier to vendor-provided identity of this entity on the remote target
- **additionalProperties:** {'type': 'string'}

priceIndex

- **type:** number
- **format:** float
- **description:** Price index of the Entity

state

- **type:** string
- **description:** State
- **enum:** ['IDLE', 'RESOURCE_ALLOCATION', 'LAUNCH', 'ACTIVE', 'RESOURCE_RELEASE', 'SUSPEND', 'SUSPEND_PENDING', 'TERMINATE_PENDING', 'NOT_MONITORED', 'MAINTENANCE', 'FAILOVER', 'UNKNOWN', 'EVACUATED', 'QUEUED']

severity

- **type:** string
- **description:** Highest severity of the Actions related to this entity
- **enum:** ['UNKNOWN', 'NORMAL', 'MINOR', 'MAJOR', 'CRITICAL']

unplacementDetails

- **description:** Additional information provided for unplaced entities in a plan
- [UnplacementDetailsApiDTO \(on page 490\)](#)

placedOn

- **type:** string
- **description:** The comma-separated classNames of entities successfully placed on, used for Unplaced entities in a Plan Market - [DEPRECATED - Use: unplacementDetails.placedOn]

notPlacedOn

- **type:** string
- **description:** The comma-separated classNames of entities could not be placed on, used for Unplaced entities in a Plan Market - [DEPRECATED - Use: unplacementDetails.reasons]

unplacedExplanation

- **type:** string
- **description:** The reason(s) the entity could not be placed - [DEPRECATED - Use: unplacementDetails.reasons]

costPrice

- **type:** number
- **format:** float
- **description:** Cost price per Hour

severityBreakdown

- **type:** object
- **description:** A Map of severity along with their count. E.g. {CRITICAL: 1, NORMAL: 10}
- **additionalProperties:** {'type': 'integer', 'format': 'int64'}

remoteld

- **type:** string
- **description:** The identifier of this instance on the remote target from which it was discoveredc - [DEPRECATED - Use: vendorIds]

realtimeMarketReference

- **description:** In case of a Plan Market Entity, this contains the original entity from the Real Time Market
- [BaseApiDTO \(on page 333\)](#)

providers

- **type:** array
- **description:** List of Providers
- – [BaseApiDTO \(on page 333\)](#)

consumers

- **type:** array
- **description:** List of Consumers
- – [BaseApiDTO \(on page 333\)](#)

template

- **description:** Related Template
- [TemplateApiDTO \(on page 482\)](#)

numRelatedVMs

- **type:** integer
- **format:** int32
- **description:** Number of related VMs

connectedEntities

- **type:** array
- **description:** Limited list of connected entities relevant to the service entity. This will not contain all connected entities.
- – [BaseApiDTO \(on page 333\)](#)

aspects

- **type:** object
- **description:** Additional info about the Entity categorized as Aspects
- **additionalProperties:** {'\$ref': '#/definitions/EntityAspect'}

tags

- **type:** object
- **description:** Tags are the metadata defined in name/value pairs. Each name can have multiple values.
- **additionalProperties:** {'type': 'array', 'items': {'type': 'string'}}

onDemandRateBefore

- **type:** number
- **format:** float
- **description:** On-demand rate before actions

onDemandRateAfter

- **type:** number
- **format:** float
- **description:** On-demand rate after actions

staleness

- **type:** string
- **description:** [BETA]: Whether the entity is outdated, i.e. discovered too long ago to be considered for analytical purposes
- **enum:** ['CURRENT', 'STALE']

ServletOutputStream

Description

Optional Parameters

ready

- **type:** boolean

SettingActivePolicyApiDTO

Description

Model to describe a Settings Policy that affect the value of a Setting

Required Parameters

numEntities

- **type:** integer
- **format:** int32
- **description:** Number of entities affected by the Settings Policy value

settingsPolicy

- **description:** Settings Policy that affects the final value of a Setting
- [BaseApiDTO \(on page 333\)](#)

value

- **type:** string
- **description:** Setting value declared in the Settings Policy

SettingApiDTOSerializable

Description

Generic model to describe a Setting. Sub types include `StringSettingApiDTO` and `RIPurchaseProfilesSettingApiDTO`.

Required Parameters

value

- **description:** Value of the setting. Type indicated by the `valueObjectType` field. The default type is `String`
- **\$ref:** [#/definitions/object](#)

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

valueDisplayName

- **type:** string
- **description:** Display Name of the Value, in case the value is a Template or another entity
- **readOnly:** True

defaultValue

- **description:** Default value before any change
- **readOnly:** True
- **\$ref:** [#/definitions/object](#)

categories

- **type:** array
- **description:** Category and sub categories of the setting
- **readOnly:** True
- – **type:** string

valueType

- **type:** string
- **description:** Define the type of the value
- **enum:** ['STRING', 'NUMERIC', 'BOOLEAN']

valueObjectType

- **type:** string
- **description:** The type of complex object values. Defaults to 'String'.
- **enum:** ['String', 'ReservedInstancePurchaseSettingsDTO']

options

- **type:** array
- **description:** List of allowable value for this setting
- **readOnly:** True
- – [SettingOptionApiDTO \(on page 460\)](#)

min

- **type:** number
- **format:** double
- **description:** If type is NUMERIC, this define the min limit
- **readOnly:** True

max

- **type:** number
- **format:** double
- **description:** If type is NUMERIC, this define the max limit
- **readOnly:** True

entityType

- **type:** string
- **description:** Entity type for this Setting

range

- **description:** Range options for the value of the setting
- **readOnly:** True
- [RangeApiDTO \(on page 422\)](#)

scope

- **type:** string
- **description:** Define the visibility of the setting. E.G. a Local Setting is only visible when associated with an Entity/Group
- **readOnly:** True
- **enum:** ['GLOBAL', 'LOCAL']

activeSettingsPolicies

- **type:** array
- **description:** List of Settings Policies that are affecting the final value of this setting
- – [SettingActivePolicyApiDTO \(on page 454\)](#)

sourceGroupName

- **type:** string
- **description:** Source group name for setting value

sourceGroupUuid

- **type:** string
- **description:** Source group uuid for setting value

SettingApiDTOString

Description

Generic model to describe a Setting. Sub types include StringSettingApiDTO and RIPurchaseProfilesSettingApiDTO.

Required Parameters

value

- **description:** Value of the setting. Type indicated by the `valueObjectType` field. The default type is `String`
- **\$ref:** [#/definitions/object](#)

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

valueDisplayName

- **type:** string
- **description:** Display Name of the Value, in case the value is a Template or another entity
- **readOnly:** True

defaultValue

- **description:** Default value before any change
- **readOnly:** True
- **\$ref:** [#/definitions/object](#)

categories

- **type:** array
- **description:** Category and sub categories of the setting
- **readOnly:** True
- - **type:** string

valueType

- **type:** string
- **description:** Define the type of the value
- **enum:** ['STRING', 'NUMERIC', 'BOOLEAN']

valueObjectType

- **type:** string
- **description:** The type of complex object values. Defaults to 'String'.
- **enum:** ['String', 'ReservedInstancePurchaseSettingsDTO']

options

- **type:** array
- **description:** List of allowable value for this setting
- **readOnly:** True
- - [SettingOptionApiDTO \(on page 460\)](#)

min

- **type:** number
- **format:** double
- **description:** If type is NUMERIC, this define the min limit
- **readOnly:** True

max

- **type:** number
- **format:** double
- **description:** If type is NUMERIC, this define the max limit
- **readOnly:** True

entityType

- **type:** string
- **description:** Entity type for this Setting

range

- **description:** Range options for the value of the setting
- **readOnly:** True
- [RangeApiDTO \(on page 422\)](#)

scope

- **type:** string
- **description:** Define the visibility of the setting. E.G. a Local Setting is only visible when associated with an Entity/Group
- **readOnly:** True
- **enum:** ['GLOBAL', 'LOCAL']

activeSettingsPolicies

- **type:** array
- **description:** List of Settings Policies that are affecting the final value of this setting
- – [SettingActivePolicyApiDTO \(on page 454\)](#)

sourceGroupName

- **type:** string
- **description:** Source group name for setting value

sourceGroupUuid

- **type:** string
- **description:** Source group uuid for setting value

SettingApiDTO

Description

Generic model to describe a Setting. Sub types include StringSettingApiDTO and RIPurchaseProfilesSettingApiDTO.

Required Parameters

value

- **description:** Value of the setting. Type indicated by the `valueObjectType` field. The default type is `String`
- **\$ref:** [#/definitions/object](#)

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

valueDisplayName

- **type:** string
- **description:** Display Name of the Value, in case the value is a Template or another entity
- **readOnly:** True

defaultValue

- **description:** Default value before any change
- **readOnly:** True
- **\$ref:** [#/definitions/object](#)

categories

- **type:** array
- **description:** Category and sub categories of the setting
- **readOnly:** True
- - **type:** string

valueType

- **type:** string
- **description:** Define the type of the value
- **enum:** ['STRING', 'NUMERIC', 'BOOLEAN']

valueObjectType

- **type:** string
- **description:** The type of complex object values. Defaults to 'String'.
- **enum:** ['String', 'ReservedInstancePurchaseSettingsDTO']

options

- **type:** array
- **description:** List of allowable value for this setting
- **readOnly:** True
- - [SettingOptionApiDTO \(on page 460\)](#)

min

- **type:** number
- **format:** double
- **description:** If type is NUMERIC, this define the min limit
- **readOnly:** True

max

- **type:** number
- **format:** double
- **description:** If type is NUMERIC, this define the max limit
- **readOnly:** True

entityType

- **type:** string
- **description:** Entity type for this Setting

range

- **description:** Range options for the value of the setting
- **readOnly:** True
- [RangeApiDTO \(on page 422\)](#)

scope

- **type:** string
- **description:** Define the visibility of the setting. E.G. a Local Setting is only visible when associated with an Entity/Group
- **readOnly:** True
- **enum:** ['GLOBAL', 'LOCAL']

activeSettingsPolicies

- **type:** array
- **description:** List of Settings Policies that are affecting the final value of this setting
- – [SettingActivePolicyApiDTO \(on page 454\)](#)

sourceGroupName

- **type:** string
- **description:** Source group name for setting value

sourceGroupUuid

- **type:** string
- **description:** Source group uuid for setting value

SettingOptionApiDTO

Description

Optional Parameters

label

- **type:** string

value

- **type:** string

SettingsManagerApiDTO

Description

Model to describe a Category Manager for the settings

Required Parameters

category

- **type:** string
- **description:** Category of the Manager

settings

- **type:** array
- **description:** List of Settings contained in the Manager
 - [SettingApiDTOSerializable \(on page 454\)](#)

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

SettingsPolicyApiDTO

Description

Model to describe a Setting Policy: a group of Settings that are applied based on Scope and/or Schedule

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

entityType

- **type:** string
- **description:** Type of the Settings Policy. E.G. VirtualMachine, PhysicalMachine, ...

scopes

- **type:** array
- **description:** List of scopes where the settings are applied, on create/edit, only Uuid is required. If null it's considered Global scope
- – [GroupApiDTO \(on page 379\)](#)

settingsManagers

- **type:** array
- **description:** List of groups of Settings to activate in this Policy
- – [SettingsManagerApiDTO \(on page 461\)](#)

schedule

- **description:** Schedule to define when the settings are applied
- [ScheduleApiDTO \(on page 445\)](#)

disabled

- **type:** boolean
- **description:** Control if the policy is Enabled or Disabled

note

- **type:** string
- **description:** Note for this Policy

readOnly

- **type:** boolean
- **description:** If true, prevents users from deleting or modifying the SettingPolicy.

default

- **type:** boolean

SkippedActionApiDTO

Description

Model to describe an action that was skipped in execution.

Required Parameters

actionId

- **type:** string
- **description:** Action ID

Optional Parameters

reason

- **type:** string
- **description:** Reason why action was skipped

StatApiDTO

Description

Model to describe a Statistic

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

name

- **type:** string
- **description:** Name

capacity

- **description:** Capacity values, used for Commodities stats
- [StatValueApiDTO \(on page 467\)](#)

reserved

- **description:** Reserved values, used for Commodities stats
- [StatValueApiDTO \(on page 467\)](#)

relatedEntityType

- **type:** string
- **description:** E.G.virtual machine

filters

- **type:** array
- **description:** describe the grouping options used to generate the output
- – [StatFilterApiDTO \(on page 465\)](#)

relatedEntity

- **description:** Provider or Consumer of the Statistic, 'relatedEntity' and 'numRelatedEntities' are mutually exclusive
- [BaseApiDTO \(on page 333\)](#)

numRelatedEntities

- **type:** integer
- **format:** int32
- **description:** Number of providers or consumers for this statistic, 'relatedEntity' and 'numRelatedEntities' are mutually exclusive

units

- **type:** string
- **description:** Units, used for Commodities stats. E.G. \$/h

values

- **description:** Contains Average, Min, Max, Total
- [StatValueApiDTO \(on page 467\)](#)

value

- **type:** number
- **format:** float
- **description:** Simple value, equal to values.avg.

histUtilizations

- **type:** array
- **description:** Commodity historical utilization values
 - [StatHistUtilizationApiDTO \(on page 465\)](#)

StatApiInputDTO

Description

Model to describe the request of a Stat. Please note that the costPrice stat is deprecated and will EOL in 8.10.1. Use the dedicated 'cost' endpoints in /entities, /groups and /markets instead.

Optional Parameters

name

- **type:** string
- **description:** Name of the stat

relatedEntityType

- **type:** string
- **description:** Used to get stats from different entity types in the supply chain of {uuid} E.G.costPrice of the VMs where the scope is a PM

filters

- **type:** array
- **description:** Filters to apply to the requested stats. Commodities supported values: key = {commodity_key}, relation = sold|bought, virtualDisk = {uuid}. Cost Price supported values: cumulative = true|false, cloudService = {uuid}, target = {uuid}, CSP = {name}, category = {name}, businessUnit = {uuid}, costComponent = COMPUTE|IP|LICENSE|STORAGE, costComponentArtifact = {key}. Please note that the costPrice stat is deprecated and will EOL in 8.10.1. Use the dedicated 'cost' endpoints in /entities, /groups and /markets instead.Action stats supported values: actionTypes = {actionType}, actionModes: {action_mode}, actionStates: {action_state}, riskSubCategory: Performance Assurance|Efficiency Improvement|Prevention|Compliance, riskSeverity: UNKNOWN|NORMAL|MINOR|MAJOR|CRITICAL
 - [StatFilterApiDTO \(on page 465\)](#)

groupBy

- **type:** array
- **description:** Execute a groupBy on the values of the stats. Commodities supported values: key, relatedEntity, virtualDisk. Cost Price supported values: cloudService, target, CSP, category, businessUnit, costComponent, costComponentArtifact. Please note that the costPrice stat is deprecated and will EOL in 8.10.1. Use the dedicated 'cost' endpoints in /entities, /groups and /markets instead.Action stats supported values: actionTypes, actionModes, actionStates, risk, riskSubCategory, riskSeverity
 - **type:** string

historyType

- **type:** string
- **description:** Query the histUtilization table for these historyTypes
- **enum:** ['Percentile', 'Smoothed']

StatFilterApiDTO

Description

Model to describe the filter applied to a Statistic

Required Parameters

type

- **type:** string
- **description:** type of the filter, E.G: actionTypes, category, ...

Optional Parameters

value

- **type:** string
- **description:** value of the filter

StatHistUtilizationApiDTO

Description

Model to describe a historical utilization statistic, e.g. the P95 vCPU or P95 vMEM of a VM over (up to) NN days observation period.

Optional Parameters

type

- **type:** string
- **description:** Historical utilization type

usage

- **type:** number
- **format:** float
- **description:** Historical usage

capacity

- **type:** number
- **format:** float
- **description:** Historical capacity

resizeMaxScalingObservationPeriod

- **type:** number
- **format:** float
- **description:** Resize max scaling observation period. Affects on amount of data points considered for action generation process. Value in days.

resizeScalingAggressiveness

- **type:** number
- **format:** float
- **description:** Resize scaling aggressiveness. Describes how aggressively Turbonomic will resize in response of resource utilization. Value in percents. 100% least aggressive, 95% most aggressive.

StatPeriodApilInputDTO

Description

Model to describe the request for Statistics by a Time range

Required Parameters

statistics

- **type:** array
- **description:** List of requested statistics, if empty all stats will be processed
- – [StatApilInputDTO \(on page 464\)](#)

Optional Parameters

startDate

- **type:** string
- **description:** Start time of the period to filter, if empty the current stats will be processed

endDate

- **type:** string
- **description:** End time of the period to filter, if empty the current stats will be processed

StatScopesApilInputDTO

Description

Model to describe the request for Statistics in multiple Scopes

Optional Parameters

scopes

- **type:** array
- **description:** List of uuid to use as scope
- – **type:** string

period

- **description:** List of requested statistics
- [StatPeriodApiInputDTO \(on page 466\)](#)

relatedType

- **type:** string
- **description:** Get the stats for the entity type related to the scopes

StatSnapshotApiDTO

Description

Model to describe the Statistics of a snapshot, contains a list of Statistics for a moment in time

Required Parameters

statistics

- **type:** array
- **description:** List of statistics, e.g. Price Index, Commodities values, Cost price, Number of VMs in a Group, ...
- – [StatApiDTO \(on page 463\)](#)

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

date

- **type:** string
- **description:** When the statistics were recorded

epoch

- **type:** string
- **description:** An indicator of whether the snapshot represents historical, projected or plan data. Should be used in conjunction with the date field to understand the context of this stat snapshot.
- **enum:** ['HISTORICAL', 'CURRENT', 'PROJECTED', 'PLAN_SOURCE', 'PLAN_PROJECTED']

StatValueApiDTO

Description

Model to describe a single statistic, e.g. the CPU of a PM Group

Optional Parameters

max

- **type:** number
- **format:** float
- **description:** Max value

min

- **type:** number
- **format:** float
- **description:** Min value

avg

- **type:** number
- **format:** float
- **description:** Average value

total

- **type:** number
- **format:** float
- **description:** Total value - sum of average values in a group

totalMax

- **type:** number
- **format:** float
- **description:** Total max value - sum of max values in a group

totalMin

- **type:** number
- **format:** float
- **description:** Total min value - sum of min values in a group

StringSettingApiDTO

Description

Inherits From

This DTO inherits from [SettingApiDTO \(on page 458\)](#)

Required Parameters

value

- **type:** string
- **description:** Value of the setting. Type indicated by the `valueObjectType` field. The default type is `String`

Optional Parameters

defaultValue

- **type:** string
- **description:** Default value before any change
- **readOnly:** True

SupplyChainStatsApilInputDTO

Description

Model to describe a Filter for Entities

Required Parameters

uuids

- **type:** array
- **description:** List of uuids used to build the supply chain
 - **type:** string
- **maxItems:** 2147483647
- **minItems:** 1

Optional Parameters

types

- **type:** array
- **description:** List of Types to filter
 - **type:** string

states

- **type:** array
- **description:** List of States to filter
 - **type:** string
 - **enum:** ['IDLE', 'RESOURCE_ALLOCATION', 'LAUNCH', 'ACTIVE', 'RESOURCE_RELEASE', 'SUSPEND', 'SUSPEND_PENDING', 'TERMINATE_PENDING', 'NOT_MONITORED', 'MAINTENANCE', 'FAILOVER', 'UNKNOWN', 'EVACUATED', 'QUEUED']

groupBy

- **type:** array
- **description:** List of fields used to group the Stats
 - **type:** string
 - **enum:** ['entityType', 'state', 'severity', 'riskSubCategory', 'template', 'target', 'businessUnit', 'resourceGroup', 'nodePool']

environmentType

- **type:** string
- **description:** Filter the actions by Environment Type
- **enum:** ['ONPREM', 'CLOUD']

SupplychainApiDTO

Description

Model to describe the Supply Chain: the Environment is described as a chain between Producers and Consumers

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

seMap

- **type:** object
- **description:** Model to describe the type of Entity associated with a SupplyChainEntry
- **additionalProperties:** {'\$ref': '#/definitions/SupplychainEntryDTO'}

SupplychainEntryDTO

Description

Model to describe a Supply Chain Entry

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

depth

- **type:** integer
- **format:** int32
- **description:** Number to indicate the level of depth of the Entity type in the Supply Chain

entitiesCount

- **type:** integer
- **format:** int32
- **description:** Number of entity in this level of depth

healthSummary

- **type:** object
- **description:** Entities count by Severity
- **additionalProperties:** {'type': 'integer', 'format': 'int32'}

stateSummary

- **type:** object
- **description:** Entities count by State
- **additionalProperties:** {'type': 'integer', 'format': 'int32'}

connectedProviderTypes

- **type:** array
- **description:** List of provider types connected to this level of depth
- **uniqueItems:** True
- – **type:** string

connectedConsumerTypes

- **type:** array
- **description:** List of consumer types connected to this level of depth
- **uniqueItems:** True
- – **type:** string

instances

- **type:** object
- **description:** List of entities in this level of depth
- **additionalProperties:** {'\$ref': '#/definitions/ServiceEntityApiDTO'}

SuspendItemApiDTO

Description

Inherits From

This DTO inherits from [ScheduleItemApiDTO \(on page 447\)](#)

Required Parameters

state

- **type:** string
- **description:** expected state during the time span
- **enum:** ['IGNORE', 'ON', 'OFF']

SuspendableEntityApiDTO

Description

Entity

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

environmentType

- **type:** string
- **description:** Environment type
- **enum:** ['CLOUD', 'ONPREM', 'HYBRID']

accountOID

- **type:** integer
- **format:** int64
- **example:** 74613608411667
- **description:** Unique ID of the account

accountName

- **type:** string
- **example:** dev-account
- **description:** Display name of the account

provider

- **type:** string
- **example:** AWS
- **description:** Name of the cloud provider
- **enum:** ['AWS', 'AZURE', 'GCP', 'HYBRID', 'UNKNOWN']

state

- **type:** string
- **example:** STOPPED
- **description:** Last known state of the entity
- **enum:** ['RUNNING', 'STOPPED', 'SUSPENDED', 'MAINTENANCE', 'FAILOVER', 'UNKNOWN', 'STARTING', 'STOPPING']

suspendable

- **type:** boolean
- **example:** True
- **description:** Signifies whether the entity can be suspended

entityType

- **type:** string
- **example:** COMPUTE
- **description:** Type of the entity
- **enum:** ['VirtualMachine']

regionOID

- **type:** integer
- **format:** int64
- **example:** 74613608411668
- **description:** Unique ID of the region, the entity belongs to

regionName

- **type:** string
- **example:** us-east-1
- **description:** Name of the region

instanceType

- **type:** string
- **example:** t3.micro
- **description:** Type of the instance

cost

- **type:** number
- **format:** double
- **example:** 10.24
- **description:** On demand hourly cost of the entity

tags

- **type:** array
- **description:** List of tags attached to the entity
 - [TagApiDTO \(on page 476\)](#)

schedules

- **type:** array
- **description:** List of schedules attached to the entity
 - [SuspendableEntityScheduleApiDTO \(on page 475\)](#)

SuspendableEntityEnforcementOverrideApiDTO

Description

represents the partial failure per entity for enforcement override on list of suspendable entities

Optional Parameters

error

- **type:** string
- **example:** entityUuid not found
- **description:** error indicating the reason for failure

entityUUID

- **type:** string

SuspendableEntityEnforcementOverrideInputDTO

Description

represents the enforcement override on list of suspendable entities either until a given time or in duration of minutes

Optional Parameters

until

- **type:** string
- **example:** 2022-11-29T01:02:03+00:00
- **description:** Time until the enforcement override on suspendable entities ends. Should be in ISO 8601 format

durationMinutes

- **type:** integer
- **format:** int32
- **example:** 60
- **description:** duration in minutes to keep enforcement override on suspendable entities

entityUuids

- **type:** array
- **description:** list of suspendable entities to override enforcement on
- – **type:** string

SuspendableEntityInputDTO

Description

Optional Parameters

entityTypes

- **type:** array
- – **type:** string
- – **enum:** ['VirtualMachine']

status

- **type:** array
- – **type:** string
- – **enum:** ['RUNNING', 'STOPPED', 'SUSPENDED', 'MAINTENANCE', 'FAILOVER', 'UNKNOWN', 'STARTING', 'STOPPING']

providers

- **type:** array
- **description:** Suspension Cloud Providers
- – **type:** string
- – **enum:** ['AWS', 'AZURE', 'GCP', 'HYBRID', 'UNKNOWN']

criteriaList

- **type:** array
- – [FilterApiDTO \(on page 378\)](#)

logicalOperator

- **type:** string
- **description:** Logical operator to be applied across all the criteria. It can take values 'AND', 'OR'. If omitted, defaults to 'AND'
- **enum:** ['AND', 'OR']

SuspendableEntityScheduleApiDTO

Description

represents time span based schedule display name and uuid of the time span based schedule attached to the suspendable entity

Optional Parameters

displayName

- **type:** string
- **example:** Up 7-5 on weekdays
- **description:** display name of the time span based schedule the suspendable entities is attached to

pauseEnforcementUntil

- **type:** integer
- **format:** int64
- **example:** 1673273639
- **description:** Pause Enforcement time over the entity, in epoch time format

scheduleUUID

- **type:** string

SuspendableEntityUUIDSetDTO

Description

list of suspendable entity uuids

Required Parameters

entityUuids

- **type:** array
- **description:** list of suspendable entity uuids
- – **type:** string

TagApiDTO

Description

Tag information

Optional Parameters

key

- **type:** string
- **description:** Tag key

values

- **type:** array
- **description:** Tag value
- – **type:** string

TargetApiDTO

Description

Model to describe a Target. Targets are used to discover the components to create a connected virtual environment

Required Parameters

type

- **type:** string
- **description:** Probe type. Turbonomic ships with the following probe types: AppDynamics, Dynatrace, Datadog, Arista, AWS, Azure, Cisco APIC, Cisco HyperFlex, Cisco UCS Central, Cisco UCS Director, Cisco UCS Manager, CloudFoundry, CloudStack, Dell Compellent, EMC ScaleIO, EMC VMAX, EMC VNX, EMC VPLEX, EMC XtremIO, Hitachi Vantara, HP OneView, HPE 3PAR, Hyper-V, IBM PowerVM, Instana, JBoss, JVM, MExchange, MySQL, NetApp, NetFlow, NetScaler, Nutanix, OpenStack, Oracle, Pivotal Ops Manager, Pure, Red Hat Virtualization Manager, sFlow, SNMP, SoftLayer, SQLServer, Tetration, Tomcat, vCenter, vCloudDirector, VMM, WebLogic, WebSphere, WMI, XenServer,

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

category

- **type:** string
- **example:** Hypervisor
- **description:** Probe category.

uiCategory

- **type:** string
- **example:** Application Server, Billing, Cloud Management, Applications and Databases, Fabric and Network, Guest OS Processes, HYPERCONVERGED, HYPERVISOR, Load Balancer, Operations Manager Appliance, ORCHESTRATOR, PaaS, Storage, Storage Browsing, WINDOWS APPLICATION. There are also categories Custom and UNKNOWN to be used for new probe development.
- **description:** Probe UI category.

identifyingFields

- **type:** array
- **description:** Array of field names used to differentiate probes of the same category. Most typically either the name/address field, or a combination of address and port.
- – **type:** string

inputFields

- **type:** array
- **description:** List of all InputFieldApiDTO objects for the target, analogous to the target addition form fields in the GUI.
- – [InputFieldApiDTO \(on page 387\)](#)

lastValidated

- **type:** string
- **description:** Date of the last validation - [DEPRECATED - Use: healthSummary.timeOfLastSuccessfulDiscovery]

status

- **type:** string
- **example:** Validated, VALIDATION FAILED, UNKNOWN
- **description:** Description of the status of the most recent Validation Operation - [DEPRECATED - Use: healthSummary.healthState]

derivedTargets

- **type:** array
- **description:** Targets derived (created by discovery of) from this target. Populated depending on the TargetRelationship parameter.
- – [TargetApiDTO \(on page 476\)](#)

patchedTargets

- **type:** array
- **description:** Targets patched by this target
- – [PatchedTargetDataApiDTO \(on page 407\)](#)

parentTargets

- **type:** array
- **description:** Targets that created this target. Populated depending on the TargetRelationship parameter.
- – [TargetApiDTO \(on page 476\)](#)

readonly

- **type:** boolean
- **description:** Whether the target cannot be changed through public APIs.

health

- **description:** [BETA]: A summary of the overall health of the target. Only returned if TargetDetailLevel is HEALTH or HEALTH_DETAILS
- [TargetHealthApiDTO \(on page 478\)](#)

lastTargetOperationStages

- **type:** array
- **description:** [BETA]: The status at each stage of the most recent validation or discovery, which ever was more recent. Only returned if TargetDetailLevel is HEALTH_DETAILS
- – [TargetOperationStageApiDTO \(on page 480\)](#)

lastEditTime

- **type:** string
- **example:** 2021-07-07T20:33:49Z
- **description:** [BETA]: The last time the target was edited in ISO-8601 Format (YYYY-MM-DDTHH:MM:SSZ). For example 2021-07-07T20:33:49Z

lastEditUser

- **type:** string
- **description:** [BETA]: The username for last user who edited the target.

healthSummary

- **description:** The health summary of the target.
- [TargetHealthSummaryApiDTO \(on page 479\)](#)

TargetErrorDetailsApiDTO

Description

Additional details related to a target error.

Required Parameters

targetErrorDetailsClass

- **type:** string

TargetHealthApiDTO

Description

A DTO that describes the health of a single target.

Required Parameters

healthCategory

- **type:** string
- **description:** The type of the health checks that are done.
- **enum:** ['TARGET', 'ACTION', 'COMPONENT']

healthClassDiscriminator

- **type:** string
- **example:** TargetHealthApiDTO
- **description:** Health type discriminator. Describes which subclass of BaseHealthApiDTO is returned.

targetName

- **type:** string
- **description:** Target display name.

uuid

- **type:** string
- **description:** UUID of the target.

Optional Parameters

errorText

- **type:** string
- **description:** Error text (if there's any).

timeOfFirstFailure

- **type:** string
- **description:** Time of first failure of validation/discovery (if the target is in failed state; ISO-8601 formatted String).

timeOfLastSuccessfulDiscovery

- **type:** string
- **example:** 2021-07-07T20:33:49Z
- **description:** [BETA]: The last time a successful discovery finished on the target in ISO-8601 Format (YYYY-MM-DDTHH:MM:SSZ). For example 2021-07-07T20:33:49Z

targetErrorDetails

- **type:** array
- **description:** Error details related to a target. Supports multiple errors details.
- – [TargetErrorDetailsApiDTO \(on page 478\)](#)

targetStatusSubcategory

- **type:** string
- **enum:** ['DISCOVERY', 'VALIDATION', 'DUPLICATION', 'DELAYED_DATA']

healthState

- **type:** string
- **enum:** ['CRITICAL', 'MAJOR', 'MINOR', 'NORMAL']

TargetHealthSummaryApiDTO

Description

A DTO that describes target health.

Required Parameters

healthState

- **type:** string
- **example:** NORMAL
- **description:** The target health state.
- **enum:** ['CRITICAL', 'MAJOR', 'MINOR', 'NORMAL']

Optional Parameters

timeOfLastSuccessfulDiscovery

- **type:** string
- **example:** 2021-07-07T20:33:49Z
- **description:** The last time a successful discovery finished on the target in ISO-8601 Format (YYYY-MM-DDTHH:MM:SSZ). For example 2021-07-07T20:33:49Z

TargetOperationStageApiDTO

Description

Holds all information related to a stage of discovery or validation.

Optional Parameters

description

- **type:** string
- **description:** The description of what this stage is doing (ideally in less than 70 characters). Example of description are "validating credentials" or "retrieving business applications".

status

- **description:** Holds all the information of this particular instance of the discovery or validation stage.
- [TargetOperationStageStatusApiDTO \(on page 480\)](#)

TargetOperationStageStatusApiDTO

Description

Holds all the information of this particular instance of the discovery or validation stage.

Optional Parameters

state

- **type:** string
- **description:** The state of this stage at the end of the discovery or validation.
- **enum:** ['DID_NOT_RUN', 'SUCCESS', 'FAILURE']

summary

- **type:** string
- **description:** The short message (ideally 70 characters or less) explaining the stage status. Example of such messages are "invalid credentials" or "4 business application retrieved".

fullExplanation

- **type:** string
- **description:** The full message explaining the stage status. This explanation may include the instructions or hints on how to address issue if there is one.

TargetThirdPartyErrorDetailsApiDTO

Description

Inherits From

This DTO inherits from [TargetErrorDetailsApiDTO \(on page 478\)](#)

Optional Parameters

targetErrorType

- **type:** string
- **description:** Target validation/discovery error type.
- **enum:** ['INTERNAL_PROBE_ERROR', 'CONNECTIVITY_ERROR', 'UNAUTHENTICATED', 'TOKEN_UNAVAILABLE', 'VERSION_NOT_SUPPORTED', 'DATA_ACCESS_ERROR', 'DUPLICATION', 'DELAYED_DATA', 'THIRD_PARTY_FAILURE']

errorCode

- **type:** string
- **example:** 0x423232, 404, 400
- **description:** Error code related to the failure.

endPoint

- **type:** string
- **description:** End point which caused the third party api failure. This can be a complete URL or a method name while using the third party SDK.

TelemetryDTO

Description

Model to describe the status of telemetry

Optional Parameters

telemetryTermsViewed

- **type:** boolean
- **description:** Controls when an administrator should be shown the telemetry opt in

telemetryEnabled

- **type:** boolean
- **description:** Controls whether analytics and telemetry are enabled

TemplateApiDTO

Description

Model to describe a Template: contains the resources used to Deploy a VM or to Add Workload/Supply in a Plan

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

price

- **type:** number
- **format:** float
- **description:** The estimated cost of the template. Used for Physical Machine and Storage templates where the hardware cost is known.

model

- **type:** string
- **example:** Cisco UCS B200 M5 (Intel Xeon Gold 5115, 2.40 GHz), PowerEdge R940 (Intel Xeon Gold 6136, 3.00 GHz), etc.
- **description:** The model of the entire Physical Machine system.

cpuModel

- **type:** string
- **example:** Intel Xeon Gold 6130, AMD Opteron 6166 HE, etc.
- **description:** The model of the CPU in the Physical Machine.

vendor

- **type:** string
- **example:** Cisco, Microsoft, HP, Novell
- **description:** Vendor of the templated entity

description

- **type:** string
- **description:** Description

image

- **type:** string
- **description:** Container Profile image

imageTag

- **type:** string
- **description:** (UNUSED) Container Profile image tag

cmdWithArgs

- **type:** string
- **description:** (UNUSED) Container command with Arguments

dbEngine

- **type:** string
- **example:** PostgreSql, AuroraMySQL, SqlServer
- **description:** Database engine, used for Database templates

dbEdition

- **type:** string
- **example:** Standard One, Enterprise, Premium_P2
- **description:** Database edition, used for Database templates

computeResources

- **type:** array
- **description:** ResourceApiDTO describing the compute resources. Max 1 per template.
- – [ResourceApiDTO \(on page 437\)](#)
- **maxItems:** 1
- **minItems:** 0

storageResources

- **type:** array
- **description:** ResourceApiDTO describing the storage resources
- – [ResourceApiDTO \(on page 437\)](#)

networkResources

- **type:** array
- **description:** ResourceApiDTO describing the network resources
- – [ResourceApiDTO \(on page 437\)](#)

infrastructureResources

- **type:** array
- **description:** ResourceApiDTO describing the infrastructure resources. Max 1 per template
- – [ResourceApiDTO \(on page 437\)](#)
- **maxItems:** 1
- **minItems:** 0

deploymentProfile

- **description:** Deployment profile associated with the template
- [DeploymentProfileApiDTO \(on page 367\)](#)

discovered

- **type:** boolean
- **example:** False
- **description:** Indicates if the template is discovered or manually created
- **enum:** [True, False]

family

- **type:** string
- **example:** standardDSv2Family, standardNCFamily, r5d, r3
- **description:** For cloud templates, the instance family.

enableMatch

- **type:** boolean
- **example:** False
- **description:** Add to Infrastructure Cost Policy. Infrastructure Cost policies group hardware devices according to their cost

TemplateApilInputDTO

Description

Model to describe a Template: contains the resources used to Deploy a VM or to Add Workload/Supply in a Plan

Optional Parameters

displayName

- **type:** string
- **description:** Name of the template

className

- **type:** string
- **description:** className
- **enum:** ['VirtualMachine', 'PhysicalMachine', 'Storage', 'Container']

price

- **type:** number
- **format:** float
- **description:** Cost price

model

- **type:** string
- **description:** The Model of the entire Physical Machine system. For example: Cisco UCS B200 M5 (Intel Xeon Gold 5115, 2.40 GHz) vs. PowerEdge R940 (Intel Xeon Gold 6136, 3.00 GHz)

cpuModel

- **type:** string
- **description:** The model of the CPU in the Physical Machine. This is separate from the model of the entire Physical Machine. For example: Intel Xeon Gold 6130 vs. AMD Opteron 6166 HE

vendor

- **type:** string
- **description:** Vendor

description

- **type:** string
- **description:** Description

image

- **type:** string
- **description:** Profile image, used for Container templates

imageTag

- **type:** string
- **description:** Profile image tag, used for Container templates

cmdWithArgs

- **type:** string
- **description:** Command with Arguments, used for Container templates

computeResources

- **type:** array
- **description:** Compute resources: Number of CPU, CPU speed, Memory size, ...
 - [ResourceApiDTO \(on page 437\)](#)
- **maxItems:** 1
- **minItems:** 0

storageResources

- **type:** array
- **description:** Storage resources: Disk I/O, Disk Size, Percentage of Disk consumed
 - [ResourceApiDTO \(on page 437\)](#)

networkResources

- **type:** array
- **description:** Network resources
 - [ResourceApiDTO \(on page 437\)](#)

infrastructureResources

- **type:** array
- **description:** Infrastructure resources: Power, Size, Cooling
 - [ResourceApiDTO \(on page 437\)](#)
- **maxItems:** 1
- **minItems:** 0

deploymentProfileId

- **type:** string
- **description:** Ids of the Deployment Profiles associated with this Template

enableMatch

- **type:** boolean
- **description:** Add to Infrastructure Cost Policy. Infrastructure Cost policies group hardware devices according to their cost

TemplatePriceAdjustmentDTO

Description

Price adjustment information for a template within a business unit and specified pricing model.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

environmentType

- **type:** string
- **description:** Environment type
- **enum:** ['CLOUD', 'ONPREM', 'HYBRID']

discount

- **type:** number
- **format:** float
- **description:** Entity discount percentage

priceAdjustment

- **description:** Entity price adjustment percentage
- [PriceAdjustmentDTO \(on page 416\)](#)

family

- **type:** string
- **description:** Family of a template, group of similar purpose templates. Available only for virtual machine templates.

pricesPerDatacenter

- **type:** array
- **description:** Template base rates per data center, provided for information purpose.
- – [EntityPriceDTO \(on page 373\)](#)

TextConditionApiDTO

Description

Inherits From

This DTO inherits from [ConditionApiDTO \(on page 354\)](#)

Required Parameters

value

- **type:** string
- **description:** A regular expression to be matched against the value of the field.
- **readOnly:** True

TextFieldValueApiDTO

Description

Inherits From

This DTO inherits from [FieldValueApiDTO](#) (on page 377)

Required Parameters

value

- **type:** string
- **description:** The value.
- **readOnly:** True

TimeBasedTopologyChangesApiDTO

Description

Topology changes based on a timeframe in the scenario

Optional Parameters

includeReservation

- **type:** boolean
- **description:** Add the workload that is currently reserved

reservationCount

- **type:** integer
- **format:** int32
- **description:** # of currently reserved VMs
- **readOnly:** True

addHistoryVMs

- **type:** boolean
- **description:** Should historical vmNetGrowth be considered

vmNetGrowth

- **type:** integer
- **format:** int32
- **description:** Number of workloads added during the last month
- **readOnly:** True

TimeSpanApiDTO

Description

Schedule Time span information

Required Parameters

begins

- **type:** string
- **description:** Start time of the time span
- **pattern:** ^([0-1]?[0-9]|2[0-3]):[0-5][0-9]\$

ends

- **type:** string
- **description:** End time of the time span
- **pattern:** ^([0-1]?[0-9]|2[0-3]):[0-5][0-9]\$

policy

- **description:** policy to be applied during this time span
- [ScheduleItemApiDTO \(on page 447\)](#)

TimeSpanGroupApiDTO

Description

Base model to describe a TimeSpanGroup.

Required Parameters

type

- **type:** string
- **example:** WeekDayTimeSpansApiDTO
- **description:** TimeSpan group type discriminator. Describes which subclass of TimeSpanGroupApiDTO is returned.

TopologyChangesApiDTO

Description

Topology changes in the scenario

Optional Parameters

addList

- **type:** array
- **description:** List of add changes in the Topology
- – [AddObjectApiDTO \(on page 330\)](#)

removeList

- **type:** array
- **description:** List of remove changes in the Topology
- – [RemoveObjectApiDTO \(on page 431\)](#)

replaceList

- **type:** array
- **description:** List of replace changes in the Topology
- – [ReplaceObjectApiDTO \(on page 431\)](#)

migrateList

- **type:** array
- **description:** List of migrate changes in the Topology
- – [MigrateObjectApiDTO \(on page 400\)](#)

relievePressureList

- **type:** array
- **description:** List of relieve pressure changes in the Topology
- – [RelievePressureObjectApiDTO \(on page 429\)](#)

TopologyDataDefinitionApiDTO

Description

Model to describe a user-defined topology definition.

Required Parameters

entityDefinitionData

- **description:** Entity definition data
- [IEntityDefinitionData \(on page 385\)](#)

entityType

- **type:** string
- **description:** The type of service entity being defined
- **enum:** ['BusinessApplication', 'BusinessTransaction', 'Service']

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

contextBased

- **type:** boolean
- **description:** Defines if this Definition is Context-Based.

UnplacementDetailsApiDTO

Description

Additional information provided for entities in a plan that are unplaced

Required Parameters

reasons

- **type:** array
- **description:** Detailed information about why the entity could not be placed
- – [UnplacementReasonApiDTO \(on page 490\)](#)

Optional Parameters

placedOn

- **type:** array
- **description:** For Unplaced entities in a Plan Market, the providers that this entity was able to place on
- – [BaseApiDTO \(on page 333\)](#)

UnplacementReasonApiDTO

Description

Details to describe why an entity could not be placed

Optional Parameters

failedResources

- **type:** array
- **description:** A list of resources that caused the entity not to be placed
- – [FailedResourceApiDTO \(on page 377\)](#)

resourceOwner

- **description:** The entity owning the resources that caused unplacement, if different than this entity. For example, a volume that caused a VM to be unplaced.
- [BaseApiDTO \(on page 333\)](#)

providerType

- **type:** string
- **description:** The entity type that sells the commodities that caused unplacement.
- **enum:** ['Application', 'ApplicationComponent', 'ApplicationServer', 'AvailabilityZone', 'BusinessAccount', 'BusinessApplication', 'BusinessTransaction', 'BusinessUser', 'Chassis', 'CloudService', 'ComputeTier', 'Container', 'ContainerPod', 'ContainerSpec', 'Database', 'DatabaseServer', 'DatabaseServerTier', 'DatabaseTier', 'DataCenter', 'DesktopPool', 'DiskArray', 'DPod', 'HCIPhysicalMachine', 'HypervisorServer', 'Internet', 'IOModule', 'LoadBalancer', 'LogicalPool', 'Namespace', 'Network', 'PhysicalMachine', 'ProcessorPool', 'Region', 'ReservedInstance', 'Service', 'ServiceProvider', 'Storage', 'StorageController', 'StorageTier', 'Switch', 'Unknown', 'ViewPod', 'VirtualApplication', 'VirtualDataCenter', 'VirtualMachine', 'VirtualVolume', 'VPod', 'WorkloadController', 'ContainerPlatformCluster', 'CloudCommitment', 'ApplicationComponentSpec', 'VirtualMachineSpec']

closestSeller

- **description:** The seller that came closest to satisfying the commodities. This information is not always available.
- [BaseApiDTO \(on page 333\)](#)

placementProblem

- **type:** string
- **description:** Categorizes the reason which caused unplacement
- **enum:** ['COSTS_NOT_FOUND', 'NOT_CONTROLLABLE', 'UNSATISFIED_COMMODITIES']

UserApiDTO

Description

Model to describe an User

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

username

- **type:** string
- **description:** Username

password

- **type:** string
- **description:** Encoded password

roles

- **type:** array
- **description:** Roles assigned to the user.
- – [RoleApiDTO \(on page 438\)](#)

loginProvider

- **type:** string
- **description:** Provider for the login
- **enum:** ['Local', 'LDAP']

type

- **type:** string
- **description:** type
- **enum:** ['DedicatedCustomer', 'SharedCustomer']

scope

- **type:** array
- **description:** List of scopes that the User is allowed to see
- – [GroupApiDTO \(on page 379\)](#)

features

- **type:** array
- **description:** List of features that the user is allowed to see
- – **type:** string

authToken

- **type:** string
- **description:** The secured user token

showSharedUserSC

- **type:** boolean

UtilizationApiDTO

Description

Model to describe a utilization change in the scenario

Optional Parameters

projectionDay

- **type:** integer
- **format:** int32
- **description:** Projection day, indicate when to apply the change

target

- **description:** Target of the change, entity or group
- [BaseApiDTO \(on page 333\)](#)

percentage

- **type:** integer
- **format:** int32
- **description:** Utilization percentage change

VMEntityAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

os

- **type:** string
- **description:** The operating system type. E.G. 'Linux', 'Windows' and 'Unknown' if not found.

ip

- **type:** array
- **description:** The IP address. Can be IPv4 or IPv6
 - **type:** string

connectedNetworks

- **type:** array
- **description:** The connected Networks
 - [BaseApiDTO \(on page 333\)](#)

numVCPUs

- **type:** integer
- **format:** int32
- **description:** Number of vCPUs

coresPerSocketRatio

- **type:** integer
- **format:** int32
- **description:** Cores per socket ratio

processorPoolName

- **type:** string
- **description:** Processor Pool

hasDedicatedProcessors

- **type:** boolean
- **example:** True
- **description:** Has Dedicated Processors

processorCompatibilityMode

- **type:** string
- **example:** POWER8
- **description:** Processor Compatibility Mode

activeMemoryExpansionEnabled

- **type:** boolean
- **example:** True
- **description:** Active Memory Expansion Enabled

resourceMonitoringControlState

- **type:** string
- **example:** active
- **description:** Resource Monitoring Control (RMC) State

sharingMode

- **type:** string
- **example:** uncapped
- **description:** Sharing Mode

dedicatedSharingMode

- **type:** string
- **example:** share_idle_pros
- **description:** Dedicated Sharing Mode

ebsOptimized

- **type:** boolean
- **description:** EBS Optimized

sessions

- **type:** array
- **description:** Information about sessions established by a BusinessUser to this VirtualMachine.
- – [BusinessUserSessionApiDTO \(on page 341\)](#)

vendorToolsVersion

- **type:** string
- **description:** Vendor Tools Version

ahublicense

- **type:** boolean

VirtualDiskApiDTO

Description

Model to describe a Virtual Disk

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

tier

- **type:** string
- **description:** The tier of the Virtual Disk

actions

- **type:** array
- **description:** The related action: Move or Delete
- - [ActionApiDTO \(on page 315\)](#)

stats

- **type:** array
- **description:** The related statistics
- - [StatApiDTO \(on page 463\)](#)

attachedVirtualMachine

- **description:** The Virtual Machine if the disk is attached
- [BaseApiDTO \(on page 333\)](#)

provider

- **description:** The Storage provider
- [BaseApiDTO \(on page 333\)](#)

dataCenter

- **description:** The DataCenter where the VirtualDisk resides
- [BaseApiDTO \(on page 333\)](#)

environmentType

- **type:** string
- **description:** Environment type
- **enum:** ['CLOUD', 'ONPREM', 'HYBRID']

lastModified

- **type:** integer
- **format:** int64
- **description:** Last Modified

businessAccount

- **description:** Business Account
- [BaseApiDTO \(on page 333\)](#)

resourceGroup

- **description:** Resource Group
- [BaseApiDTO \(on page 333\)](#)

creationTime

- **type:** string
- **description:** Creation time

skuName

- **type:** string
- **description:** Sku name

snapshotId

- **type:** string
- **description:** Snapshot id

encryption

- **type:** string
- **description:** Encryption

attachmentState

- **type:** string
- **description:** Attachment state
- **enum:** ['AVAILABLE', 'IN_USE', 'UNKNOWN']

name

- **type:** string
- **description:** Name

ephemeral

- **type:** string
- **description:** Ephemeral

lastAttachedVm

- **type:** string
- **description:** Name of the VM this volume was last attached to.

numDaysUnattached

- **type:** string
- **description:** Number of days ago this volume was last attached.

hourlyBilledOps

- **type:** number
- **format:** double
- **description:** Average number of billed operations per hour.

attachedVMStorageCompatibility

- **type:** string
- **description:** Storage compatibility for virtualDisks's attached VM(s). The compatibility will affect scale analysis for the volume. If an attached VM is not PREMIUM compatible, the volume will never scale to a premium StorageTier
- **enum:** ['PREMIUM', 'STANDARD']

storageUsageType

- **type:** string
- **description:** Usage type for the volume, i.e., what the volume is used for.
- **enum:** ['SITE_RECOVERY', 'BACKUP', 'STANDARD']

VirtualDisksAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

virtualDisks

- **type:** array
- **description:** List of Virtual Disks
- – [VirtualDiskApiDTO \(on page 494\)](#)

VirtualVolumeEntityAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

files

- **type:** array
- **description:** Files comprised in the volume
- – **type:** string

WebhookApiDTO

Description

Inherits From

This DTO inherits from [WorkflowAspect \(on page 504\)](#)

Required Parameters

method

- **type:** string
- **description:** The http method used to make the request.
- **enum:** ['GET', 'POST', 'PUT', 'DELETE', 'PATCH']

url

- **type:** string
- **description:** The URL that HTTP request is made to.

Optional Parameters

template

- **type:** string
- **description:** The template for the body of request.

authenticationMethod

- **type:** string
- **description:** The authentication method to use for the request.
- **enum:** ['NONE', 'BASIC', 'OAUTH']

username

- **type:** string
- **description:** The username for the authenticated request.

password

- **type:** string
- **description:** The password for the authenticated request.

trustSelfSignedCertificates

- **type:** boolean
- **description:** If true, self-signed certificates will be trusted when using HTTPS connections. Defaults to 'false'.

headers

- **type:** array
- **description:** The request headers.

oauthData

WeekDayTimeSpansApiDTO

Description

Inherits From

This DTO inherits from [TimeSpanGroupApiDTO \(on page 488\)](#)

Optional Parameters

sunday

- **type:** array
- **description:** Schedule time spans information for sunday
- – [TimeSpanApiDTO \(on page 488\)](#)

monday

- **type:** array
- **description:** Schedule time spans information for monday
- – [TimeSpanApiDTO \(on page 488\)](#)

tuesday

- **type:** array
- **description:** Schedule time spans information for tuesday
- – [TimeSpanApiDTO \(on page 488\)](#)

wednesday

- **type:** array
- **description:** Schedule time spans information for wednesday
- – [TimeSpanApiDTO \(on page 488\)](#)

thursday

- **type:** array
- **description:** Schedule time spans information for thursday
- – [TimeSpanApiDTO \(on page 488\)](#)

friday

- **type:** array
- **description:** Schedule time spans information for friday
- – [TimeSpanApiDTO \(on page 488\)](#)

saturday

- **type:** array
- **description:** Schedule time spans information for saturday
- – [TimeSpanApiDTO \(on page 488\)](#)

WhereApiDTO

Description

Filter for entity or group queries.

Optional Parameters

relatedToScopes

- **type:** array
- **description:** Restrict to entities related to these scopes.
- **readOnly:** True
- – **type:** integer
- – **format:** int64

conditions

- **type:** array
- **description:** Restrict to entities satisfying these conditions.
- **readOnly:** True
- – [ConditionApiDTO \(on page 354\)](#)

WidgetApiDTO

Description

Basic information of an entity

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

type

- **type:** string

scope

- [BaseApiDTO \(on page 333\)](#)

startPeriod

- **type:** string

endPeriod

- **type:** string

row

- **type:** integer
- **format:** int32

column

- **type:** integer
- **format:** int32

sizeRows

- **type:** integer
- **format:** int32

sizeColumns

- **type:** integer
- **format:** int32

widgetsetId

- **type:** integer
- **format:** int64

widgetElements

- **type:** array
- – [WidgetElementApiDTO \(on page 501\)](#)

WidgetElementApiDTO

Description

Basic information of an entity

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

row

- **type:** integer
- **format:** int32

column

- **type:** integer
- **format:** int32

type

- **type:** string

widgetId

- **type:** integer
- **format:** int64

properties

- **type:** object
- **additionalProperties:** {'type': 'string'}

stats

- **type:** array
- – [StatApiInputDTO \(on page 464\)](#)

datasets

- **type:** array
- – **type:** string

WidgetsetApiDTO

Description

Basic information of an entity

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

scope

- **type:** string

startPeriod

- **type:** string

endPeriod

- **type:** string

widgets

- **type:** array
- – [WidgetApiDTO \(on page 500\)](#)

category

- **type:** string

scopeType

- **type:** string

username

- **type:** string

isSharedWithAllUsers

- **type:** boolean

WorkflowApiDTO

Description

Model to describe a Workflow

Required Parameters

discoveredBy

- **description:** Target that discovered this workflow
- [TargetApiDTO \(on page 476\)](#)

type

- **type:** string
- **description:** The type of this workflow
- **enum:** ['UCSD', 'ACTION_SCRIPT', 'SERVICENOW', 'ACTIONSTREAM_KAFKA', 'WEBHOOK']

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

description

- **type:** string
- **description:** Description of the workflow

entityType

- **type:** string
- **description:** Type of the entity associated

actionType

- **type:** string
- **description:** Type of the action associated

parameters

- **type:** array
- **description:** Input parameters for the workflow
- – [InputFieldApiDTO \(on page 387\)](#)

scriptPath

- **type:** string
- **description:** Full path to workflow script (e.g. path to an ActionScript executable)

actionPhase

- **type:** string
- **description:** Action Phase to which workflow applies

timeLimitSeconds

- **type:** integer
- **format:** int64
- **description:** Time limit for workflow execution, in seconds

typeSpecificDetails

- **description:** The information about this workflow that is specific to its type.
- [WorkflowAspect \(on page 504\)](#)

WorkflowAspect

Description

Parent model to describe a type-specific workflow details

Required Parameters

type

- **type:** string

WorkflowOperationRequestApiDTO

Description

The details of the requested operation on the workflow.

Required Parameters

actionId

- **type:** integer
- **format:** int64
- **description:** The ID of the action that we perform the workflow operation on

operation

- **type:** string
- **description:** The operation that is being performed on the workflow
- **enum:** ['TEST']

WorkflowOperationResponseApiDTO

Description

Result of a workflow operation.

Required Parameters

succeeded

- **type:** boolean
- **description:** True if the workflow operation has succeeded.

Optional Parameters

uuid

- **type:** string

displayName

- **type:** string
- **description:** A user readable name of the api object. Cannot be blank. The UTF-8 encoding must be at most 255 bytes.

className

- **type:** string

details

- **type:** string
- **description:** Details of workflow operation result.

WorkloadControllerAspectApiDTO

Description

Inherits From

This DTO inherits from [EntityAspect \(on page 371\)](#)

Optional Parameters

controllerType

- **type:** string
- **description:** Information about workload controller type.
- **enum:** ['CRON_JOB_INFO', 'CUSTOM_CONTROLLER_INFO', 'DAEMON_SET_INFO', 'DEPLOYMENT_INFO', 'JOB_INFO', 'REPLICA_SET_INFO', 'REPLICATION_CONTROLLER_INFO', 'STATEFUL_SET_INFO']

customControllerType

- **type:** string
- **description:** Information about custom controller type. Only set when the controllerType is CUSTOM_CONTROLLER_INFO.

controllerReplicaCount

- **type:** integer
- **format:** int32
- **description:** The number of active replicas controlled by the workload controller.



Appendix: Entity Statistics

Workload Optimization Manager monitors the following statistics for entities in your environment:

ApplicationComponent Statistics

Heap

Produces

RemainingGcCapacity

ResponseTime

Threads

Transaction

VCPU

VMem

BusinessApplication Statistics

Produces

Not Implemented: The number of entities connected to this provider, used in calculating pricing.

ResponseTime

Response time, measured in ms.

Transaction

Transactions per second

BusinessTransaction Statistics

Produces

ResponseTime

Transaction

BusinessUser Statistics

ActiveSessions

ImageCPU

ImageMem

ImageStorage

PoolCPU

PoolMem

PoolStorage

Produces

TotalSessions

Chassis Statistics

Cooling

Allocated cooling indicates the highest acceptable running temperature for a physical device, such as a chassis in a compute fabric.

Power

A measure of the power that is consumed by a physical device.

priceIndex

The degree of risk for the chassis.

Produces

Not Implemented: The number of entities connected to this provider, used in calculating pricing.

Space

When known, the amount of physical hardware that can be used in conjunction with this entity. For example, the number of spaces in a server rack.

ContainerPlatformCluster Statistics

NumberConsumers

Produces

VCPU

VCPURequest

VMem

VMemRequest

ContainerPod Statistics

NumberConsumers

Produces

StorageAmount

VCPU

VCPULimitQuota

VCPURequest

VCPURequestQuota

VMem

VMemLimitQuota

VMemRequest

VMemRequestQuota

VStorage

ContainerSpec Statistics

Produces

VCPU

VCPURequest

VCPUThrottling

VMem

VMemRequest

Container Statistics

Produces

Not Implemented: The number of entities connected to this provider, used in calculating pricing.

VCPU

The percentage utilization of the VCPU allocated for the hosting entity.

VCPULimitQuota

VCPURequest

VCPURequestQuota

VCPUThrottling

VMem

The percentage utilization of the VMem allocated to the hosting VM.

VMemLimitQuota

VMemRequest

VMemRequestQuota

DataCenter Statistics

Ballooning

Ballooning capacity, measured in KBytes. This capacity is the greater of 65% of the VMem configured for all powered-on VMs that the PM hosts, or the physical memory capacity

Cooling

Allocated cooling indicates the highest acceptable running temperature for a physical device, such as a chassis in a compute fabric.

CPU

Host CPU capacity, measured in MHz. This shows what percentage of CPU cycles are devoted to processing instructions.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

CPUAllocation

DESCRIPTION

CPUProvisioned

The aggregate Overprovisioned CPU capacity and utilization on the host, in KB. Capacity is a function of the overprovisioning percentage specified for the host.

HostLunAccess

HotStorage

IOThroughput

The data rate through the PM's IO adapters, measured in Kbytes per second.

Mem

The aggregate percentage of the PM's memory that is reserved or in use, measured in Kbytes.

MemAllocation

DESCRIPTION

MemProvisioned

Overprovisioned MEM capacity and utilization on the host, in KB. Capacity is a function of the overprovisioning percentage specified for the host.

NetThroughput

The aggregate data rate through the PM's network adapters

numCPUs

Host CPU capacity, measured in MHz. This shows what percentage of CPU cycles are devoted to processing instructions

numHosts

The number of hosts in the Datacenter

numSockets

The number of sockets in the Datacenter

Power

A measure of the power that is consumed by a physical device.

priceIndex

The degree of risk for the datacenter

Produces

Not Implemented: The number of entities connected to this provider, used in calculating pricing.

Q16VCPU

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Q1VCPU

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Q2VCPU

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Q32VCPU

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Q4VCPU

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Q64VCPU

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Q8VCPU

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Space

When known, the amount of physical hardware that can be used in conjunction with this entity. For example, the number of spaces in a server rack.

StorageAccess

IOPS capacity and utilization

StorageLatency**Swapping**

DESCRIPTION

DatabaseServer Statistics

Connection**DBCACHEHitRate****DBMem****priceIndex****Produces****ResponseTime****Transaction****TransactionLog****VCPU****VMem****VStorage**

Database Statistics

costPrice

DESCRIPTION

DTU**LicenseAccess****priceIndex**

The degree of risk for the database

Produces**Not Implemented:** The number of entities connected to this provider, used in calculating pricing.**StorageAmount**

DesktopPool Statistics

ActiveSessions

CPUAllocation

ImageCPU

ImageMem

ImageStorage

MemAllocation

PoolCPU

PoolMem

PoolStorage

priceIndex

Produces

TotalSessions

DiskArray Statistics

Extent

priceIndex

Produces

IOModule Statistics

Cooling

Allocated cooling indicates the highest acceptable running temperature for a physical device, such as a chassis in a compute fabric.

NetThroughput

The data rate through the entity's network adapters, measured in Kbytes/second

PortChannel

DESCRIPTION

Power

A measure of the power that is consumed by a physical device.

priceIndex

The degree of risk for the IO Module

Produces

Not Implemented: The number of entities connected to this provider, used in calculating pricing.

LogicalPool Statistics

DiskArrayAccess

Extent

priceIndex

Produces

StorageAccess

StorageAmount

StorageLatency

StorageProvisioned

Namespace Statistics

priceIndex

Produces

VCPU

VCPULimitQuota

VCPURequest

VCPURequestQuota

VMem

VMemLimitQuota

VMemRequest

VMemRequestQuota

PhysicalMachine Statistics

Ballooning

Ballooning capacity, measured in KBytes. This capacity is the greater of 65% of the VMem configured for all powered-on VMs that the PM hosts, or the physical memory capacity.

Cooling

CPU

CPU capacity, CPU reserved, and CPU utilized, in MHz.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

CPUAllocation

CPU capacity, as allocated to the host, in MHz.

CPUProvisioned

Overprovisioned CPU capacity and utilization on the host, in MHz. Capacity is a function of the overprovisioning percentage specified for the host.

HostLunAccess

IOThroughput

Capacity and utilization of data rate through the host's IO adapter, measured in Kbits/sec.

Mem

The percentage of the PM's memory that is reserved or in use, measured in Kbytes.

MemAllocation

Allocation and utilization of host memory, measured in KB.

MemProvisioned

Overprovisioned MEM capacity and utilization on the host, in KB. Capacity is a function of the overprovisioning percentage specified for the host.

NetThroughput

Capacity and utilization of data rate through the host's Network adapter, measured in Kbits/sec.

numCPUs

The number of CPUs on the host.

numSockets

The number of sockets discovered on this host.

Power**priceIndex**

The degree of risk for the host.

Produces

Not Implemented: The number of entities connected to this provider, used in calculating pricing.

Q16VCPU

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Q1VCPU

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Q2VCPU

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Q32VCPU

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Q4VCPU

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Q64VCPU**Q8VCPU**

Ready queue capacity and wait time, measured in ms. Workload Optimization Manager monitors 1-CPU, 2-CPU, 4-CPU, up to 32-CPU ready queues.

Space**StorageAccess****StorageLatency****Swapping**

The capacity, reserved capacity, and utilization for rate of memory swapping to disk, in bits per second.

Service Statistics

NumberReplicas

priceIndex

Produces

StorageController Statistics

priceIndex

The degree of risk for the disk array.

Produces

Not Implemented: The number of entities connected to this provider, used in calculating pricing.

StorageAmount

The storage capacity, reserved storage, and utilized storage for this entity's storage in MB

StorageTier Statistics

StorageAccess

IOPS capacity and utilization

StorageAmount

The storage capacity, reserved storage, and utilized storage for this entity in MB

StorageClusterCommodity

StorageLatency

The capacity, reserved amount, and utilized amount of latency for storage transactions, in msec.

StorageProvisioned

Overprovisioned storage capacity and utilization on the entity, in MB. Capacity is a function of the overprovisioning percentage specified for the entity.

Storage Statistics

Extent

priceIndex

The degree of risk for the storage entity.

Produces

Not Implemented: The number of entities connected to this provider, used in calculating pricing.

StorageAccess

IOPS capacity and utilization

StorageAmount

The storage capacity, reserved storage, and utilized storage for this entity in MB

StorageLatency

The capacity, reserved amount, and utilized amount of latency for storage transactions, in msec.

StorageProvisioned

Overprovisioned storage capacity and utilization on the entity, in MB. Capacity is a function of the overprovisioning percentage specified for the entity.

Switch Statistics

NetThroughput

The data rate through the entity's network adapters, measured in Kbytes/second.

PortChannel

The data rate through the port channel, measured in Kbytes/second.

priceIndex

The degree of risk for the Switch.

Produces

Not Implemented: The number of entities connected to this provider, used in calculating pricing.

ViewPod Statistics

ActiveSessions**priceIndex****Produces****TotalSessions**

VirtualDataCenter Statistics

CPUAllocation

Host CPU capacity, measured in MHz. This shows what percentage of CPU cycles are devoted to processing instructions

MemAllocation

DESCRIPTION

priceIndex

The degree of risk for the virtual datacenter

Produces

Not Implemented: The number of entities connected to this provider, used in calculating pricing.

VirtualMachine Statistics

Ballooning

Ballooning capacity, measured in KBytes. This capacity is the greater of 65% of the VMem configured for all powered-on VMs that the PM hosts, or the physical memory capacity

CPU

Host CPU capacity, measured in MHz. This shows what percentage of CPU cycles are devoted to processing instructions

The percentage utilization of the VCPU allocated for the hosting VM.

CPUAllocation

DESCRIPTION

CPUProvisioned

Overprovisioned CPU capacity and utilization on the entity, in Mhz. Capacity is a function of the overprovisioning percentage specified for the entity.

IOThroughput

DESCRIPTION

Mem

The percentage of the PM's memory that is reserved or in use by the VM, measured in Kbytes.

The percentage utilization of the VMem allocated by the host.

MemAllocation

DESCRIPTION

MemProvisioned

Overprovisioned Mem capacity and utilization on the entity, in Kbytes. Capacity is a function of the overprovisioning percentage specified for the entity.

NetThroughput

The data rate through the entity's network adapters, measured in Kbytes/second

numVCPUs

DESCRIPTION

priceIndex

The degree of risk for the Virtual Machine

Produces

Not Implemented: The number of entities connected to this provider, used in calculating pricing.

StorageAccess

IOPS capacity and utilization

StorageAmount

The storage capacity, reserved storage, and utilized storage for this entity's storage in MB

StorageLatency

DESCRIPTION

StorageProvisioned

Overprovisioned storage capacity and utilization on the entity, in MB. Capacity is a function of the overprovisioning percentage specified for the entity.

Swapping

DESCRIPTION

VCPU

The percentage utilization of the VCPU allocated for the hosting VM.

VMem

The percentage utilization of the VMem allocated by the host.

VStorage

Virtual storage allocated to a VM, measured in Kbytes.

VirtualVolume Statistics

costPrice

IOThroughput

Produces

StorageAccess

StorageAmount

StorageLatency

StorageProvisioned

WorkloadController Statistics

priceIndex

Produces

VCPULimitQuota

VCPURequestQuota

VMemLimitQuota

VMemRequestQuota



Appendix: API Change History

Each major release of Workload Optimization Manager includes fixes issues and improvements to the API. This section lists these changes for each major release.

NOTE:

We implement deprecations in point releases of Workload Optimization Manager. For example, assume we set the End of Life (EOL) for some API features at 8.4.3. In that case, you would see the deprecations linked here in the entry for 8.5.0, along with the list of all other fixes and improvements we made in the 8.4.x point releases. To see the latest deprecation history, go to [Appendix: API Deprecation History \(on page 533\)](#).

Workload Optimization Manager 3.6.0 API Fixes and Improvements

- **Fixed Issue:**

Fix Version: 8.7.3

“For API developers, when executing requests on the Search endpoint, the API does not paginate the returned result.”

For API developers, when executing requests on the Search endpoint, the API does not paginate the returned result.

Workload Optimization Manager 3.5.0 API Fixes and Improvements

- **Improvement:**

Fix Version: 8.6.5

“The API now supports reservations with cluster affinity.”

When creating reservations, you can now specify affinity rules for the reserved VMs. You can ensure all the VMs in a reservation deploy to the same cluster. If you do not specify affinity, the VMs deploy to any clusters in the scope. This is the same as earlier behavior for reservations.

For more information, see [Affinity Rules \(on page 151\)](#).

- **Improvement:**

Fix Version: 8.2.5

Fix Version: 8.6.3

“The `/supplychains/leafEntities` endpoint is now available.”

This release introduces the `/supplychains/leafEntities` endpoint that you can use to define your own supply chain topology. This endpoint returns a list of 'leaf entities' related to a 'seed entity'.

For more information, see [Getting Leaf Entities from a Supply Chain Root \(on page 239\)](#).

- **Fixed Issue:**

Fix Version: 8.6.1

“The maximum entries returned for GET and POST methods is 500.”

Starting with Workload Optimization Manager version 3.4.1, GET and POST methods return a maximum of 500 entries when run on ServiceEntities, Groups, or BusinessAccount endpoints. You should always check for pagination in your results.

Workload Optimization Manager 3.4.0 API Fixes and Improvements

- **Improvement:**

“The API now includes the `Plan Destinations` endpoint.”

A plan destination is an external resource where plan results can be uploaded. Currently, you can upload the results of a 'Migrate to Cloud' plan to the Azure Migrate portal. Use the `Plan Destinations` endpoint to get plan destinations and run uploads.

- **Improvement:**

“When deleting a reservation, you can now specify whether to permanently delete that reservation.”

The API now includes the new `reservation_force_delete` parameter that you can pass along with a `DELETE` call to a specific reservation. When `reservation_force_delete = true`, the system removes the reservation permanently, no matter what state it is in. Before this release, a reservation that you deleted via the API or user interface continued to display for deletion, and was only permanently deleted after 48 hours.

- **Improvement:**

“The API includes a new LABEL commodity type.”

The `commodityType` enum includes a new LABEL commodity type.

- **Improvement:**

“For API developers, when a reservation you create fails, the returned DTO includes more data about the failure.”

When you create a reservation, and the reservation fails, the API returns a DTO to explain the cause of the failure. This DTO includes new fields:

- `timespan`: Indicates whether the reservation calculation was based on realtime or historical resource utilization data. Can be one of:
 - `Current`: The calculations were based on realtime utilization data
 - `Historical`: The calculations were based on historical utilization
- `cluster`: The name of the cluster that came the closest to being able to provide the resources that the reservation needed.
- `hrefCluster`: A link to stats for the closest-seller cluster.
- `hrefEntity`: A link to stats for the closest-seller entity that is a member of the closest-seller cluster.

For example, the DTO can include data similar to the following for a placement failure:

```
"placements": {
  "failureInfos": [
    {
      "resource": "StorageAmount",
      "timespan": "Historical",
      "closestSeller": {
        "uuid": "74167780552264",
```

```

        "displayName": "QSGRID01:DC6DS2",
        "className": "Storage",
        "cluster": "StorageCluster-A",
        "hrefEntity": "/reservations/stats/74167780552264",
        "hrefCluster": "/reservations/stats/74167780552265"
    },
    "maxQuantityAvailable": 248294.59024047852,
    "quantityRequested": 273184.5625,
    "units": "MB"
}
]
}

```

- **Improvement:**

“Handling of non-executable actions has been improved.”

This release improves the handling of actions that are currently not executable due to prerequisite actions.

For example, in order to suspend Host A, VM_01 in the host must first move to Host B. However, Host B only has capacity for one VM and is currently hosting VM_02. In this case, Host A suspension is blocked by two prerequisite actions – VM_02 moving to another host and VM_01 moving to Host B.

The Action Details page for the main action (Host A suspension in the example) now shows the following information:

"Blocked by actions on target or destination that need to be executed first."

For earlier releases, the Action Details page indicated that the action is blocked by a policy.

For API developers, the `ActionApiDTO` now shows this state. Workload Optimization Manager sets the `BLOCKED_BY` key of the `relatedActionsCountByType` parameter to 0, which indicates that an action is currently not executable due to prerequisite actions.

When all the prerequisite actions have been executed, the main action becomes executable.

- **Improvement:**

“When you examine a failed reservation via the API, the data now returns a reason for the failure.”

After you create a reservation, you can GET the `reservations` endpoint for data about the current reservations in your environment. The resulting data includes a `status`. If the status is `PLACEMENT_FAILED`, Workload Optimization Manager could not place all the workloads in the reservation for some reason. Starting with version 3.3.4, the `placements` field in the data includes `invalidInfo` to give a reason for the placement failure. The reason can be:

- `MARKET_CONNECTIVITY_ERROR`: The reservation process could not connect to the Market component for some reason.
- `MARKET_NOT_READY`: The market does not have data from the Headroom plans for the given reservation scope.
- `INVALID_CONSTRAINTS`: The reservation policies include conflicting or invalid constraints.

For example, the data for a single reservation could include the following data:

```

"demandEntities": [
  {
    "template": {
      "uuid": "215167980658768",
      "displayName": "MyVmTemplate",
      "className": "VirtualMachineProfile"
    },
    "placements": {
      "invalidInfo": {
        "invalidReason": "MARKET_CONNECTIVITY_ERROR"
      }
    }
  }
]

```

Workload Optimization Manager 3.3.0 API Fixes and Improvements

- **Fixed Issue:**

“The GET /entities/{entity_Uuid}/groups endpoint is not included in the Swagger UI.”

The Swagger documentation does not include an entry for the endpoint, GET /entities/{entity_Uuid}/groups.

- **Fixed Issue:**

“When you create groups with a case-insensitive filter, the group results can be unexpected.”

For API scripts that create groups, if you set `caseSensitive = false` for a regex filter, the results can be unexpected. The group creation can fail, or you can create a group that does not contain the entities you expect. For example:

- **Fixed Issue:**

“Under some circumstances, the search endpoint can arbitrarily fail to return data.”

Because of timing issues when updating cached group data, calls to the `search` endpoint can fail to return data.

Workload Optimization Manager 3.2.0 API Fixes and Improvements

- **Improvement:**

For Dynatrace, you can now enable or disable collection of VM metrics via the Dynatrace target.

When managing applications, analysis takes VM metrics into account. In a Dynatrace environment, Workload Optimization Manager can discover VM data from the Dynatrace target and also from the underlying VMs. If it collects VM data from both sources, analysis will use the Dynatrace data.

For most environments it is best to use the VM data that Workload Optimization Manager collects directly from the VMs themselves. The data can be richer and more accurate, and discovery of this data through Dynatrace can experience unsatisfactory performance.

To give you control over the source of VM metric data that analysis will use, this release introduces the **Collect Virtual Machine Metrics** setting when you configure a Dynatrace target. By default, this setting is **Off**. In that case, Workload Optimization Manager does not collect VM metrics via the Dynatrace target, and analysis uses data collected from the VMs themselves.

NOTE:

If you turn this setting **On** for the target, then analysis does not use the percentiles that you configure in the **Aggressiveness** settings for the affected VMs.

When you configure a Dynatrace via the API, you can now use the optional setting:

```
{
  "displayName": "Collect Virtual Machine Metrics",
  "name": "collectVmMetrics",
  "value": "false",
  "defaultValue": "false",
  "isMandatory": false,
  "isSecret": false,
  "isMultiline": false,
  "isTargetDisplayName": false,
  "valueType": "BOOLEAN",
  "description": "Overwrite Hypervisor or Cloud Provider Virtual Machine metrics with data from the target",
  "verificationRegex": "(true|false)"
}
```

- **Improvement:**

This release includes the Minimum Wasted File Size setting for Wasted File policies.

When it discovers wasted files, Workload Optimization Manager identifies a given storage, plus the list of wasted files on it. In some circumstances, if the volume has many files, the data to describe the volume is too large to transport from the target back to Workload Optimization Manager. In that case, analysis can fail to include the affected storage, and the log can post an error that includes the string (where * is a wildcard):

```
BroadcastStage.*Entity.*failed to be broadcast because it's too large
```

To reduce the data payload for that storage, you can direct wasted storage browsing to skip over files of a minimum size. Then the data only includes larger files in its list, which can reduce the overall payload. The default minimum is 1 MB.

If you continue to see this problem, you can increase the size of wasted files to add into the list. That should reduce the number of wasted files on a volume. To adjust the **Minimum Wasted Files Size** setting:

1. Configure a Storage Policy.
Navigate to **Settings** and choose **Policies**. Then edit or create a new Storage automation policy.
2. Edit the Minimum Wasted Files Size setting.
In the **Storage Settings** section, edit the value for **Minimum Wasted Files Size**.

When editing policies via the API, you can find this setting in the storage settings manager (`...api/v3/settings/specs?manager_uuid=storagesettingsmanager`). The setting is defined as:

```
{
  "uuid": "minWastedFilesSize",
  "displayName": "Minimum Wasted Files Size [KB]",
  "defaultValue": "1000.0",
  "valueType": "NUMERIC",
  "valueObjectType": "String",
  "min": 0,
  "max": 1000000000,
  "entityType": "Storage"
}
```

- **Fixed Issue:**

When you execute a POST stats/uuid call with no `groupBy` setting, the API sometimes returns grouped stats.

For a POST: `.../stats/{statistic_Uuid}` call to the API, you can specify `groupBy` parameters for the statistics you want to get. If you do not provide any `groupBy` values, the API should return ungrouped stats records. However, under some circumstances it does return grouped records. The API should be consistent.

- **Fixed Issue:**

Executing a GET on the businessunits endpoint can return data even if there are no businessunit entities in the given scope.

Executing a GET on the businessunits endpoint can return data even if there are no businessunit entities in the given scope. The data it returns is an array with a single element in it. For example:

```
[{"master":false,"riSupported":false,"hasRelatedTarget":false}]
```

The proper response for this circumstance should be an empty array.

Workload Optimization Manager 3.1.0 API Fixes and Improvements

- **Improvement:**

The Stats that the API returns for a VStorage entity now include the volume name in the `displayName` field.

When you get stats for a VStorage entity, the returned data now includes the volume name in the `displayName` field. In previous versions the API returned the entity's key value for `displayName`.

- **Improvement:**

New stats fields for a cloud scope.

When a `/stats` request is executed for a cloud scope, the following four fields will be returned when applicable to summarize savings and investments:

- **REALIZED_SAVINGS:**
Savings from executed efficiency actions.
- **REALIZED_INVESTMENTS:**
Investments from executed performance actions.
- **MISSED_SAVINGS:**
Potential savings from recommended efficiency actions that were not taken.
- **MISSED_INVESTMENTS:**
Potential investments from recommended performance actions that were not taken.

- **Improvement:**

The `LicenseApiDTO` now includes the `customerId` parameter.

Starting with Workload Optimization Manager 3.0.3, `LicenseApiDTO` includes the `customerId` parameter, a unique identifier for the licensed customer. This ID is intended to match the same customer to multiple licenses. For example, if one customer runs two Workload Optimization Manager instances each with its own license, the `customerId` will be the same for both.

- **Fixed Issue:**

For accepted values in the `FilterApiDTO` object, the Swagger UI did not list `RXEQ` or `RXNEQ` as valid match types.

When you specify filters, you can specify Equals (`RXEQ`) or Not Equals (`RXNEQ`) for REGEX values. The Swagger UI now includes these as allowable values in its explanation. The values you can specify are:

- For Strings
'EQ', 'NEQ', 'RXEQ', 'RXNEQ'
- For Numbers
'EQ', 'NEQ', 'GT', 'LT', 'GTE', 'LTE'

- **Fixed Issue:**

For a list of actions, filter by Instance Type does not work for Optimization actions.

When you view a list of actions, you can filter by different criteria, including Instance Type. However filtering by Instance Type does not work for Optimization actions.

- **Fixed Issue:**

Search filters that include Not Equals criteria can return incorrect results.

When you set up search criteria that use a Not Equals operator, the results can be incorrect.

- **Fixed Issue:**

When you use the API to get the "numVMs" stats for an unsupported scope, the API returns a value of zero.

When you execute the `api/v3/stats?ascending=true` request, you typically set a scope for the request. When requesting the `numVMs` stat, the scope must be a cluster. If you set a different type of scope, the data returns zero for the number of VMs. This is misleading, because it implies that there are no VMs in that scope. Instead, the returned value should indicate that you used an invalid scope.

- **Fixed Issue:**

Using the API to get the Global Defaults policy returns invalid data.

To query for the Global Defaults policy, you can use the following request:

```
api/v3/settingspolicies/55555
```

However, this request returns an invalid payload, with no policy data in it.

- **Fixed Issue:**

After the licensed workload capacity has been exceeded, you can still add targets via the API.

Workload Optimization Manager licensing specifies the number of workloads you can manage via targets. However, if you exceed the licensed capacity of workloads, you can still add new targets via the API, which increases the workload count.

Workload Optimization Manager 3.0.0 API Fixes and Improvements

- **Fixed Issue:**

Under some circumstances, when creating large groups the API returns a 500 error and generates the following log entry:

```
ERROR [grpc-default-executor-22959] [GroupRpcService] : Cannot find groups with ids
```

- **Fixed Issue:**

The GET `/supplyChains` request no longer returns an `entity` level of information when `compact` is passed in the request.

- **Fixed Issue:**

When providing an invalid `ScenarioApiInputDTO` for scenario creation, the API will return an appropriate error. Instead, the API returned 200 with an invalid Scenario UUID.

- **Fixed Issue:**

Due to an issue with the generated Swagger DTO hierarchy, parsing the result of the GET `actions/uuid/details` request would cause an error to be generated. This error will no longer occur, and the request will complete successfully.

- **Fixed Issue:**

A request for `/reservations/stats/uuid` can return values for Reserved VMs that have been deployed.

After using the API to deploy the VMs in a reservation, Workload Optimization Manager keeps a record of those VMs and their reservations for 48 hours. When you get stats for reserved VMs, the API incorrectly includes values for these deployed VMs. The actions that Workload Optimization Manager recommends are correct, but reporting on provider statistics can be incorrect.

- **Fixed Issue:**

When you view a density chart (e.g. VMs over Host Density), the chart should roll data up into the appropriate data points. For example, for hourly data, it should not also include ten-minute data points. However, the chart display mixes these data point types.

- **Fixed Issue:**

API response times have been improved when sending a query that returned entity stats against the `StorageAmount` metric.

- **Fixed Issue:**

For the `/targets/{targetUuid}/health` request, the `state` parameter enum has the following values and descriptions:

- NORMAL (1):

This entity is in a healthy state.

- MINOR (2):

The recommended action will improve the environment, but is unlikely to have severe consequences if not addressed.

- MAJOR (3):

The recommended action will improve the environment, and if left unaddressed is likely to have severe consequences.

- CRITICAL (4):

The recommended action will improve the environment, and if left unaddressed *will* have severe consequences. These actions should be addressed immediately.

- **Known Issue:**

The `limitEntities` parameter in the `ActionScopesApiInputDTO` is ignored in the `POST /actions` and `POST /actions/stats` requests. In the `POST /actions` request, this functionality is handled by pagination.

- **Improvement:**

In the `marketsettingsmanager settings manager`, the settings `minReplicas` and `maxReplicas` have been added, which enable you to specify the minimum and maximum replicas for application component horizontal scaling.

- **Improvement:**

The `getActionDetailType` parameter has been added to the `ActionDetailsApiDTO`. This parameter will return the action type of the requested action.

- **Improvement:**

To assign the Report Editor privilege to a user account, you can use the API. For example, you can create a user with Report Editor privileges with the following API payload:

```
{
  "username": "MyUserName",
  "password": "MyPassword",
  "type": "DedicatedCustomer",
  "loginProvider": "LOCAL",
  "roles": [{"name": "report_editor"}, {"name": "advisor"}]
}
```

In this example, the `roles` field is an array of roles that includes the `report_editor` role. If you need help using the API, please contact your support representative.

- **Improvement:**

The data returned from any requests for ENTITIES includes aspects. Under circumstances where there is no value for the following aspects, the DTO does not include the given aspect:

- `aspects.dbAspect.maxConcurrentSessions`
- `aspects.dbAspect.maxConcurrentWorkers`

- **Improvement:**

The API now includes the new `reservation_deployed` parameter that you can pass along with a `DELETE` call to a specific reservation. This enables Workload Optimization Manager to correctly track resource utilization on the affected providers.

When you delete a reservation via the API, and you include the `reservation_deployed = true` parameter, the following things happen:

- Workload Optimization Manager analysis is aware of the newly deployed workloads on the providers, and tracks those VMs as usual.
- The reservation remains in the Workload Optimization Manager for 48 hours. If you inspect this reservation via the API or the user interface, the reservation appears unchanged.
- After 48 hours, Workload Optimization Manager deletes the reservation.

- **Improvement:**

This version of Workload Optimization Manager introduces a new Global Default setting, `Enable analysis of on-prem Virtual Volume`. This setting enables the product to generate the commodities and perform the analysis required to execute actions on individual virtual volumes.

NOTE:

We offer this feature as a public preview. Feature details might be subject to change.

This version of Workload Optimization Manager introduces a new boolean setting to the `marketsettingsmanager` settings manager, `onPremVirtualVolumeResourceAnalysis`. This global setting defaults to `false`, and when enabled, the product will generate the commodities and perform the analysis required to execute actions on individual virtual volumes.

- **Improvement:**

The action DTO now includes the related cluster in the `connectedEntities` object for each of the Current, the New, and the Target entities in the action description. In the DTO, the cluster object is similar to:

```
"connectedEntities": [
  {
    "className": "Cluster",
    "displayName": "ACM/ACM Cluster",
    "uuid": "73856545920539"
  }
]
```

- **Improvement:**

In the `DemandReservationApi` DTO, the `relatedResources` parameter has been deprecated and replaced by the `linkedResources` parameter. This parameter returns more detailed information about the reservation resources.

- **Improvement:**

When at least one of the parameters `orderBy`, `limit`, or `cursor` are included with the `GET /tags` request, the results will be paginated.

Without these parameters, the results will be returned in full.

- **Improvement:**

The `Provision` setting for scaling actions has been replaced with the `Horizontal Scaling` setting. In addition, the following items must be true to horizontally scale applications:

- The application must be horizontally scalable and reside on a Kubernetes target
- The application must have `Transaction` or `ResponseTime` metrics
- `Transaction SLO` or `Response Time SLO` must be enabled

- **Improvement:**

When at least one of the parameters `orderBy`, `limit`, or `cursor` are included with the `GET /search`, `POST /search`, and `GET /groups` requests, the results will be paginated. Without these parameters, the results will be returned in full.

In addition, the `environmentType` and `cloudType` parameters for empty groups will be set to the values of the target(s) that initially discovered them.



Appendix: API Deprecation Contract

The following endpoints, requests, DTOs, and parameters are deprecated in the Workload Optimization Manager API. The End of Life (EOL) gives the product version in which we will finalize these changes, and will no longer offer the deprecated items.

NOTE:

See the instructions for alternative usage for deprecated items with a defined EOL.

EOL: 8.9.1

We will make the following deprecation changes in the 8.9.1 release. These deprecated features will be removed from the API at that time.

Endpoints	None
Requests	None
Request Parameters	None
DTOs	<ul style="list-style-type: none">• DTO: ScenarioChangeApiDTO Instruction: Use the loadChanges or configChanges parameters in the ScenarioApiDTO.
DTO Parameters	<ul style="list-style-type: none">• DTO: ScenarioApiDTO Parameter Name: changes Instruction: Use the loadChanges or configChanges parameters.

EOL: 8.10.1

We will make the following deprecation changes in the 8.10.1 release. These deprecated features will be removed from the API at that time.

Endpoints	None
Requests	None
Request Parameters	None

DTOs	None
DTO Parameters	<ul style="list-style-type: none">▪ DTO: StatApiInputDTO Parameter Name: costPrice Instruction: Use the dedicated <code>cost</code> endpoints in <code>/entities</code>, <code>/groups</code>, and <code>/markets</code> instead. NOTE: These are marked "In Development" currently but will reach GA soon. - <code>/entities/{entity_Uuid}/cost</code> - <code>/groups/{group_Uuid}/cost</code> - <code>/markets/{market_Uuid}/cost</code>



Appendix: API Deprecation History

The following endpoints, requests, DTOs, and/or parameters have been deprecated in the Workload Optimization Manager API. The End of Life (EOL) gives the product version in which we finalized these changes, and no longer support the deprecated items.

EOL: 8.8.1

These deprecated features are removed from the API.

Endpoints	None
Requests	<ul style="list-style-type: none"> ▪ GET /search/market/ Instead, use GET /markets ▪ GET /search/target/ Instead, use GET /targets ▪ GET /groups/<groupId>/actions/<actionId> Do not use this call (not implemented). ▪ GET, POST /target/<targetId>/stats Do not use this call (not implemented). ▪ GET /businessunits/<busUnitId>/stats Instead, use GET /entities/<entityId>/stats or GET /stats/<entityId>/stats. These calls use the business unit entity ID. ▪ POST /businessunits/<busUnitId>/stats Instead, use POST /stats/<entityId>/stats or POST /stats.
Request Parameters	None
DTOs	None
DTO Parameters	None
ENUM Values	<ul style="list-style-type: none"> ▪ entityType:VMSpec Use VirtualMachineSpec instead ▪ entityTypes:VMSpec

	<p>Use <code>VirtualMachineSpec</code> instead</p> <ul style="list-style-type: none"> ▪ <code>entityTypeFilter:VMSpec</code> Use <code>VirtualMachineSpec</code> instead ▪ <code>providerEntityType:VMSpec</code> Use <code>VirtualMachineSpec</code> instead ▪ <code>relatedEntityType:VMSpec</code> Use <code>VirtualMachineSpec</code> instead ▪ <code>providerType:VMSpec</code> Use <code>VirtualMachineSpec</code> instead
--	--

EOL: 8.7.1

These deprecated features are removed from the API.

Endpoints	None
Requests	<ul style="list-style-type: none"> ▪ <code>DELETE /entities/<entityId>/tags/<tagKey></code> Instead, use <code>DELETE /entities/<entityId>/tags?key=<tagKey></code> ▪ <code>DELETE /groups/<groupId>/tags/<tagKey></code> Instead, use <code>DELETE /groups/<groupId>/tags?key=<tagKey></code>
Request Parameters	None
DTOs	<ul style="list-style-type: none"> ▪ <code>LicenseApiInputDTO</code> Instruction: Use <code>LicenseApiDTO</code>.
DTO Parameters	<ul style="list-style-type: none"> ▪ DTO: <code>HttpProxyDTO</code> Parameter Name: <code>portNumber</code> Instruction: Use <code>proxyPortNumber</code>. ▪ DTO: <code>LogEntryApiDTO</code> Parameter Name: <code>reasonCommodity</code> Instruction: Use the array, <code>reasonCommodities</code>.

EOL: 8.6.1

Behavior Changes:

- **Pagination of Returned Data from `/search` requests:**

For searches, the API paginates the returned data. Starting with version 8.6.1, the default pagination limit is 100 entries, and the maximum pagination limit is 500. If you do not specify a pagination limit, then the API returns pages set to the default limit of 100. If you make no settings, and your search results include more than 100 entries, the results will be paginated. Your scripts should always check for a pagination cursor when processing search results.

You can change these settings in the Workload Optimization Manager `cr.yaml` file. Find the entries for:

- `apiPaginationDefaultLimit`
- `apiPaginationMaxLimit`

We made the following deprecation changes in the 8.6.1 release. These deprecated features were removed from the API at that time.

Endpoints	None
Requests	None
Request Parameters	None
DTOs	<ul style="list-style-type: none"> ReportScheduleApiDTO This release will remove ReportScheduleApiDTO.
DTO Parameters	<ul style="list-style-type: none"> DTO: ActionApiDTO Parameter Name: CurrentLocation Instruction: The object in this parameter will only contain the following fields: <ul style="list-style-type: none"> links uuid className displayName discoveredBy environmentType vendorIDs DTO: ActionApiDTO Parameter Name: NewLocation Instruction: The object in this parameter will only contain the following fields: <ul style="list-style-type: none"> links uuid className displayName discoveredBy environmentType vendorIDs DTO: ProductVersionDTO Parameter Name: buildUser Instruction: Deprecated with no replacement. This parameter was not implemented in the 8.x product family.

	<ul style="list-style-type: none"> ▪ DTO: GroupApiDTO Parameter Name: <code>remoteId</code> Instruction: Deprecated with no replacement. This parameter was not implemented in the 8.x product family. ▪ DTO: UserApiDTO Parameter Names: <ul style="list-style-type: none"> - <code>roleUuid</code> - <code>roleName</code> <p>Instruction: Deprecated. Use the <code>roles</code> parameter in UserApiDTO.</p>
--	---

EOL: 8.5.1

Behavior Changes:

- **Pagination of Returned Data**

The default pagination will change for the following requests:

- `GET /groups`
- `GET /groups/<groupId>/members`
- `GET /groups/<groupId>/entities`
- `GET /targets/<targetId>/entities`
- `GET /tags`
- `GET /tags/{tagKey}/entities`

To paginate returned data, the `limit`, `orderBy`, and `cursor` parameters control how the APIs paginate their data. Currently if you specify any one of these parameters, the API paginates the returned data. If you do not specify any of these parameters, the API does not paginate the output, and it returns an unlimited set of data.

Starting with version 8.5.1, if you do not specify a `limit` for these requests, the API will paginate the data to a default limit. If your scripts make these requests without setting a `limit`, you should update them to check for a pagination cursor in the returned data.

We made the following deprecation changes in the 8.5.1 release. These deprecated features were removed from the API at that time.

Endpoints	None
Requests	<ul style="list-style-type: none"> ▪ Request: <code>GET /users/onetimepassword</code> Instruction: Deprecated with no replacement. This is not required for any Workload Optimization Manager activities.
Request Parameters	None
DTOs	None
DTO Parameters	None

EOL: 8.4.3

We made the following deprecation changes in the 8.4.3 release. These deprecated features were removed from the API at that time.

Endpoints	None
Requests	None
Request Parameters	<ul style="list-style-type: none"> Request: GET /search Parameter Name: regex Instruction: Use the queryType parameter.
DTOs	<ul style="list-style-type: none"> DTO: StatPercentileApiDTO Instruction: Use StatHistUtilizationApiDTO.
DTO Parameters	<ul style="list-style-type: none"> DTO: ActionApiDTO Parameter Name: resizeToValue Instruction: Use the newValue parameter. DTO: ActionScopesApiDTO Parameter Name: limitEntities Instruction: Use the limit parameter. DTO: BillingFamilyApiDTO Parameter Name: uuidToNameMap Instruction: Use the businessUnitApiDTOList parameter. DTO: BusinessUnitApiDTO Parameter Name: hasRelatedTarget Instruction: Use the associatedTargetId parameter. DTO: ScopeUuidsApiInputDTO Parameter Name: topologyContextId Instruction: Use the marketId parameter. DTO: StatApiDTO Parameter Name: percentile Instruction: Use the histUtilizations parameter. DTO: TargetApiDTO Parameter Name: currentBusinessAccount Instruction: Use the associatedTargetId parameter of the BusinessUnit-ApiDTO.