NailGun Documentation

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Contents

NailGun is a GPL-licensed Python library that facilitates easy usage of the Satellite 6 API. It lets you write code like this:

```
>>> org = Organization(id=1).read()
```

This page provides a summary of information about NailGun.

Contents

More in-depth coverage is provided in other sections.

CHAPTER 1

Examples

This page contains several examples of how to use NailGun. The examples progress from simple to more advanced.

You can run any of the scripts presented in this document. This is the set-up procedure for scripts that use NailGun:

```
virtualenv env
source env/bin/activate
pip install nailgun
./some_script.py  # some script of your choice
```

This is the set-up procedure for scripts that do not use NailGun:

```
virtualenv env
source env/bin/activate
pip install requests
./some_script.py  # some script of your choice
```

Additionally, a video demonstration entitled NailGun Hands On is available.

Contents

1.1 Video Demonstration

Note that this video does not touch on features that were added after it was recorded on May 26 2015, such as the *update* method.

1.2 Getting Started

This script demonstrates how to create an organization, print out its attributes and delete it using NailGun:

```
#!/usr/bin/env python
# -*- coding: utf-8 -*-
"""Create an organization, print out its attributes and delete it.

Use NailGun to accomplish this task.

"""
from nailgun.config import ServerConfig
from nailgun.entities import Organization
from pprint import pprint


def main():
    """Create an organization, print out its attributes and delete it."""
    server_config = ServerConfig(
        auth=('admin', 'changeme'),      # Use these credentials...
        url='https://sat1.example.com',  # ...to talk to this server.
    )
    org = Organization(server_config, name='junk org').create()
    pprint(org.get_values())  # e.g. {'name': 'junk org', ...}
    org.delete()


if __name__ == '__main__':
    main()
```

This script demonstrates how to do the same *without* NailGun:

```
#!/usr/bin/env python
# -*- coding: utf-8 -*-
"""Create an organization, print out its attributes and delete it.

Use Requests and standard library modules to accomplish this task.

"""
```

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```
from pprint import pprint
import json
import requests


def main():
    """Create an organization, print out its attributes and delete it."""
    auth = ('admin', 'changeme')
    base_url = 'https://sat1.example.com'
    organization_name = 'junk org'
    args = {'auth': auth, 'headers': {'content-type': 'application/json'}}

    response = requests.post(
        base_url + '/katello/api/v2/organizations',
        json.dumps({
            'name': organization_name,
            'organization': {'name': organization_name},
        }),
        **args
    )
    response.raise_for_status()
    pprint(response.json())
    response = requests.delete(
        '{0}/katello/api/v2/organizations/{1}'.format(
            base_url,
            response.json()['id'],
        ),
        **args
    )
    response.raise_for_status()


if __name__ == '__main__':
    main()
```

1.3 Managing Server Configurations

In the example shown above, a *nailgun.config.ServerConfig* object was created in the body of the script. However, inter-mixing configuration data and program logic in this manner is problematic:

- Placing sensitive information in to a code-base puts that information at risk of becoming public, especially when the code-base is version-controlled.
- Server-specific configuration information is likely to change frequently. Placing that information in to a code-base means subjecting that code-base to unnecessary churn, making it harder for developers to find useful information in a repository's change log.

NailGun addresses this issue by providing full support for configuration files. Here's a simple example of how to create a pair of configuration objects, save them to disk, and read them back again:

```
>>> from nailgun.config import ServerConfig
>>> ServerConfig('http://sat1.example.com').save('sat1')
>>> ServerConfig('http://sat2.example.com').save('sat2')
>>> set(ServerConfig.get_labels()) == set(('sat1', 'sat2'))
True
```

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```
>>> sat1_cfg = ServerConfig.get('sat1')
>>> sat2_cfg = ServerConfig.get('sat2')
```

A label of "default" is used when saving or reading configuration objects if no explicit label is given. As a result, this is valid:

```
>>> from nailgun.config import ServerConfig
>>> ServerConfig('bogus url').save()
>>> ServerConfig.get().url == 'bogus url'
True
```

The use of "default" is especially useful if you have created numerous server configurations, but only want to work with one at a time:

```
>>> from nailgun.config import ServerConfig
>>> ServerConfig.get('sat1').save()  # same as .save(label='default')
```

In addition, if no server configuration object is specified when instantiating an *nailgun.entity_mixins.Entity* object, the server configuration labeled "default" is used. With this in mind, here's a revised version of the first script in section *Getting Started*:

```
#!/usr/bin/env python
# -*- coding: utf-8 -*-
"""Create an organization, print out its attributes and delete it."""
from nailgun.entities import Organization
from pprint import pprint


def main():
    """Create an organization, print out its attributes and delete it."""
    org = Organization(name='junk org').create()
    pprint(org.get_values())  # e.g. {'name': 'junk org', ...}
    org.delete()


if __name__ == '__main__':
    main()
```

This works just fine in many use cases. But what if you do not want to save your server configuration to disk? This might be the case if multiple processes are using NailGun and each process should default to communicating with a different default server, or if you are working with a read-only file system. In this case, you can use *nailgun.entity_mixins.DEFAULT_SERVER_CONFIG*.

NailGun handles other use cases, too. For example, the XDG base directory specification is obeyed, meaning that you can do things like provide a system-wide configuration file or place user configuration data in an alternate location. Read *nailgun.config* for full details.

1.4 Using More Methods

The examples so far have only made use of a small set of classes and methods:

- The `ServerConfig` class and several of its methods.
- The `Organization` class and its `create`, `get_values` and `delete` methods.

However, there are several more very useful high-level methods that you should be aware of. In addition, there are aspects to the `create` method that have not been touched on.

1.4.1 get_fields

The `get_fields` method is closely related to the `get_values` method. The former tells you which values *may* be assigned to an entity, and the latter tells you what values *are* assigned to an entity. For example:

```
>>> from nailgun.entities import Product
>>> product = Product(name='junk product')
>>> product.get_values()
{'name': 'junk product'}
>>> product.get_fields()
{
    'description': <nailgun.entity_fields.StringField object at 0x7fb5bf25ee10>,
    'gpg_key': <nailgun.entity_fields.OneToOneField object at 0x7fb5bf1f1128>,
    'id': <nailgun.entity_fields.IntegerField object at 0x7fb5bd4bd748>,
    'label': <nailgun.entity_fields.StringField object at 0x7fb5bd48b7f0>,
    'name': <nailgun.entity_fields.StringField object at 0x7fb5bd48b828>,
    'organization': <nailgun.entity_fields.OneToOneField object at 0x7fb5bd498f60>,
    'sync_plan': <nailgun.entity_fields.OneToOneField object at 0x7fb5bd49eac8>,
}
```

Fields serve two purposes. First, they provide typing information mixins. For example, a server expects this JSON payload when creating a product:

```
{
    "name": "junk product",
    "organization_id": 5,
    ...
}
```

And a server will return this JSON payload when reading a product:

```
{
    "name": "junk product",
    "organization": {
        'id': 3,
        'label': 'c5f2646f-5975-48c4-b2a3-bf8398b44510',
        'name': 'junk org',
    },
    ...
}
```

Notice how the "organization" field is named and structured differently in the above two cases. NailGun can deal with this irregularity due to the presence of the `StringField` and `OneToOneField`. If you are ever fiddling with an

entity's definition, be careful to use the right field types. Otherwise, you may get some strange and hard-to-troubleshoot bugs.

Secondly, fields can generate random values for unit testing purposes. (This does *not* normally happen!) See the `create_missing` method for more information.

1.4.2 create

So far, we have only used brand new objects:

```
>>> from nailgun.entities import Organization
>>> org = entities.Organization(name='junk org').create()
```

However, we can also use existing objects:

```
>>> from nailgun.entities import Organization
>>> org = entities.Organization()
>>> org.name = 'junk org'
>>> org = org.create()
```

Note that the `create` method is side-effect free. As a result, the `org = org.create()` idiom is advisable. (The next section discusses this more.)

1.4.3 read

The `read` method fetches information about an entity. Typical usages of this method have already been shown, so this example goes in to more detail:

```
>>> from nailgun.entities import Organization
>>> org = Organization(id=418)
>>> response = org.read()
>>> for obj in (org, response):
...     type(obj)
...
<class 'nailgun.entities.Organization'>
<class 'nailgun.entities.Organization'>
>>> for obj in (org, response):
...     obj.get_values()
...
{'id': 418}
{
    'description': None,
    'id': 418,
    'label': 'junk_org',
    'name': 'junk org',
    'title': 'junk org',
}
```

Some notes on the above:

- The `read` method requires that an `id` attribute be present. Running `Organization().read()` will throw an exception.
- The `read` method is side-effect free. Rather than altering the object it is called on, it creates a new object, populates that object with attributes and returns the object. As a result, idioms like `org = org.read()` are advisable.

So far, we have only used brand new objects:

```
>>> from nailgun.entities import Organization
>>> org = Organization(id=418).read()
```

However, we can also use existing objects:

```
>>> from nailgun.entities import Organization
>>> org = Organziation()
>>> org.id = 418
>>> org = org.read()
```

1.4.4 update

The `update` method updates an entity's values. For example:

```
>>> from nailgun.entities import Organization
>>> org = Organization(id=418).read()
>>> org.get_values()
{
    'description': None,
    'id': 418,
    'label': 'junk_org',
    'name': 'junk org',
    'title': 'junk org',
}
>>> org.name = 'junkier org'
>>> org.description = 'supercalifragilisticexpialidocious'
>>> org = org.update()  # update all fields by default
>>> org.get_values()
{
    'description': 'supercalifragilisticexpialidocious',
    'id': 418,
    'label': 'junk_org',
    'name': 'junkier org',
    'title': 'junkier org',
}
>>> org.description = None
>>> org = org.update(['description'])  # update only named fields
>>> org.get_values()
{
    'description': None,
    'id': 418,
    'label': 'junk_org',
    'name': 'junkier org',
    'title': 'junkier org',
}
```

Some notes on the above:

- By default, the `update` method updates all fields. However, it is also possible to update a subset of fields.
- The `update` method is side-effect free. As a result, idioms like `org = org.update()` are advisable.

So far, we have only called `update` on existing objects. However, we can also call `update` on brand new objects:

```
>>> from nailgun.entities import Organization
>>> Organization(
...     id=418,
...     name='junkier org',
...     description='supercalifragilisticexpialidocious',
... ).update(['name', 'description'])
```

1.4.5 search

The `search` method searches for entities. By default, it searches for all entities of a given kind:

```
lc_envs = LifecycleEnvironment().search()
```

If any attributes have been set, they are used. This finds all lifecycle environments that have a name of "foo" and that belong to organization 1:

```
lc_envs = LifecycleEnvironment(name='foo', organization=1).search()
```

You can choose to use only some fields in a search. This finds all lifecycle environments that have a name of "foo":

```
lc_envs = LifecycleEnvironment(name='foo', organization=1).search({'name'})
```

Other options are available, too. You can hard-code query parameters (especially useful for pagination), filter results locally and more. For examples of how to search, see *nailgun.entity_mixins.EntitySearchMixin.search()*. For examples of how search queries are generated, see *nailgun.entity_mixins.EntitySearchMixin.search_payload()*.

1.5 Helper Functions

Nailgun has also some helper functions for common operations.

1.5.1 to_json_serializable

This function parses nested nailgun entities, date, datetime, numbers, dict and list so the result can be parsed by json module:

```
>>> from nailgun import entities
>>> from nailgun.config import ServerConfig
>>> from datetime import date, datetime
>>> cfg=ServerConfig('https://foo.bar')
>>> dct = {'dict': {'objs':
[
    1, 'str', 2.5, date(2016, 12 , 13),
    datetime(2016, 12, 14, 1, 2, 3)
]}}
>>> entities.to_json(dct)
{'dict':
    {'objs': [1, 'str', 2.5, '2016-12-13', '2016-12-14 01:02:03']}
}
>>> env = entities.Environment(cfg, id=1, name='env')
>>> entities.to_json(env)
{'id': 1, 'name': 'env'}
```

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```
>>> location =  entities.Location(cfg, name='loc')
>>> hostgroup = entities.HostGroup(
        cfg, name='hgroup', id=2, location=[location])
>>> entities.to_json_serializable(hostgroup)
{'location': [{'name': 'loc'}], 'name': 'hgroup', 'id': 2}
>>> mixed = [regular_object, env, hostgroup]
>>> entities.to_json_serializable(mixed)
[
    {'dict': {'objs': [1, 'str', 2.5, '2016-12-13', '2016-12-13']}},
    {'id': 1, 'name': 'env'},
    {'location': [{'name': 'loc'}], 'name': 'hgroup', 'id': 2}
]
>>> import json
>>> json.dumps(entities.to_json_serializable(mixed))
'[{"dict": {"objs": [1, "str", 2.5, "2016-12-13", "2016-12-13"]}}, {"id": 1, "name":
↪"env"}, {"location": [{"name": "loc"}], "name": "hgroup", "id": 2}]'
```

1.6 Using Lower Layers

This section demonstrates how to create a user account. To make things interesting, there are some extra considerations:

- The user account must belong to the organization labeled "Default_Organization".
- The user account must be named "Alice" and have the password "hackme".
- The user account must be created on a pair of satellites.

Two sets of code that accomplish this task are listed. The first body of code shows how to accomplish the task with NailGun. The second body of code does not make use of NailGun, and instead relies entirely on Requests and standard library modules.

```
#!/usr/bin/env python
# -*- coding: utf-8 -*-
"""Create an identical user account on a pair of satellites."""
from __future__ import print_function
from nailgun.config import ServerConfig
from nailgun.entities import Organization, User
from pprint import pprint


def main():
    """Create an identical user account on a pair of satellites."""
    server_configs = ServerConfig.get('sat1'), ServerConfig.get('sat2')
    for server_config in server_configs:
        org = Organization(server_config).search(
            query={'search': 'name="Default_Organization"'}
        )[0]
        # The LDAP authentication source with an ID of 1 is internal. It is
        # nearly guaranteed to exist and be functioning.
        user = User(
            server_config,
            auth_source=1,  # or: AuthSourceLDAP(server_config, id=1),
            login='Alice',
            mail='alice@example.com',
```

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```
            organization=[org],
            password='hackme',
        ).create()
        pprint(user.get_values())  # e.g. {'login': 'Alice', ...}


if __name__ == '__main__':
    main()
```

The code above makes use of NailGun. The code below makes use of Requests and standard library modules.

```
#!/usr/bin/env python
# -*- coding: utf-8 -*-
"""Create an identical user account on a pair of satellites.

If you'd like to test out this script, you can quickly set up an environment
like so::

    virtualenv env
    source env/bin/activate
    pip install requests
    ./create_user_plain.py  # copy this script to the current directory

"""
from __future__ import print_function
from pprint import pprint
import requests
import json


def main():
    """Create an identical user account on a pair of satellites."""
    server_configs = (
        {'url': url, 'auth': ('admin', 'changeme'), 'verify': False}
        for url
        in ('https://sat1.example.com', 'https://sat2.example.com')
    )
    for server_config in server_configs:
        response = requests.post(
            server_config['url'] + '/api/v2/users',
            json.dumps({
                'user': {
                    'auth_source_id': 1,
                    'login': 'Alice',
                    'mail': 'alice@example.com',
                    'organization_ids': [get_organization_id(
                        server_config,
                        'Default_Organization'
                    )],
                    'password': 'hackme',
                }
            }),
            auth=server_config['auth'],
            headers={'content-type': 'application/json'},
            verify=server_config['verify'],
        )
        response.raise_for_status()
```

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```
        pprint(response.json())


def get_organization_id(server_config, label):
    """Return the ID of the organization with label ``label``.

    :param server_config: A dict of information about the server being talked
        to. The dict should include the keys "url", "auth" and "verify".
    :param label: A string label that will be used when searching. Every
        organization should have a unique label.
    :returns: An organization ID. (Typically an integer.)

    """
    response = requests.get(
        server_config['url'] + '/katello/api/v2/organizations',
        data=json.dumps({'search': 'label={}'.format(label)}),
        auth=server_config['auth'],
        headers={'content-type': 'application/json'},
        verify=server_config['verify'],
    )
    response.raise_for_status()
    decoded = response.json()
    if decoded['subtotal'] != 1:
        print(
            'Expected to find one organization, but instead found {0}. Search '
            'results: {1}'.format(decoded['subtotal'], decoded['results'])
        )
        exit(1)
    return decoded['results'][0]['id']


if __name__ == '__main__':
    main()
```

What's different between the two scripts?

First, both scripts pass around `server_config` objects (see *nailgun.config.ServerConfig*). However, the NailGun script does not include any hard-coded parameters. Instead, configurations are read from disk. This makes the script more secure (it can be published publicly without any information leakage) and maintainable (server details can change independent of programming logic).

Second, the sans-NailGun script relies entirely on convention when placing values in to and retrieving values from the `server_config` objects. This is easy to get wrong. For example, one piece of code might place a value named `'verify_ssl'` in to a dictionary and a second piece of code might retrieve a value named `'verify'`. This is a mistake, but you won't know about it until runtime. In contrast, the `ServerConfig` objects have an explicit set of possible instance attributes, and tools such as Pylint can use this information when linting code. (Similarly, NailGun's entity objects such as `Organization` and `User` have an explicit set of possible instance attributes.) Thus, NailGun allows for more effective static analysis.

Third, NailGun automatically checks HTTP status codes for you when you call methods such as `create`. In contrast, the sans-NailGun script requires that the user call `raise_for_status` or some equivalent every time a response is received. Thus, NailGun makes it harder for undetected errors to creep in to code and cause trouble.

Fourth, there are several hard-coded paths present in the sans-NailGun script: `'/katello/api/v2/organizations'` and `'/api/v2/users'`. This is a hassle. Developers need to look up a path every time they write an API call, and it's easy to make a mistake and waste time troubleshooting the resultant error. NailGun shields the developer from this issue — not a single path is present!

Fifth, the NailGun script shields developers from idiosyncrasies in JSON request formats. Notice how no nested dict is necessary when issuing a GET request for organizations, but a nested dict is necessary when issuing a POST request for users. Differences like this abound. NailGun packages data for you.

Sixth, and perhaps most obviously, the NailGun script is *significantly* shorter! This makes it easier to focus on high-level business logic instead of worrying about implementation details.

CHAPTER 2

API Documentation

This is the NailGun API documentation. It is mostly auto generated from the source code. A good place to start reading is *nailgun*.

The *nailgun* namespace is the public API. The *tests* is not part of the public API, and it is documented here for easy reference for developers.

2.1 nailgun

The root of the NailGun namespace.

NailGun's modules are organized in to a tree of dependencies, where each module only knows about the modules below it in the tree and no module knows about others at the same level in the tree. The modules can be visualized like this:

```
nailgun.entities
└── nailgun.entity_mixins
    ├── nailgun.entity_fields
    ├── nailgun.config
    └── nailgun.client
```

If this is your first time working with NailGun, please read several of the *Examples* before the documentation here.

2.1.1 nailgun.entities

This module defines all entities which Foreman exposes.

Each class in this module allows you to work with a certain set of logically related API paths exposed by the server. For example, *nailgun.entities.Host* lets you work with the `/api/v2/hosts` API path and sub-paths. Each class attribute corresponds an attribute of that entity. For example, the `Host.name` class attribute represents the name of a host. These class attributes are used by the various mixins, such as `nailgun.entity_mixins.EntityCreateMixin`.

Several classes contain work-arounds for bugs. These bugs often affect only specific server releases, and ideally, the work-arounds should only be attempted if communicating with an affected server. However, work-arounds can only be conditionally triggered if NailGun has a facility for determining which software version the server is running. Until then, the safe route will be taken, and all work-arounds will be attempted all the time. Each method that makes use of a work-around notes so in its docstring.

nailgun.entity_mixins.Entity provides more insight into the inner workings of entity classes.

exception nailgun.entities.**APIResponseError**
Indicates an error if response returns unexpected result.

class nailgun.entities.**AbstractComputeResource**(*server_config=None*, ***kwargs*)
A representation of a Compute Resource entity.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

update(*fields=None*)
Fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1250922.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**AbstractContentViewFilter**(*server_config=None*, ***kwargs*)
A representation of a Content View Filter entity.

class nailgun.entities.**AbstractDockerContainer**(*server_config=None*, ***kwargs*)
A representation of a docker container.

This class is abstract because all containers must come from somewhere, but this class does not have attributes for specifying that information.

> **Warning:** A docker compute resource must be specified when creating a docker container.

create(*create_missing=None*)
Do extra work to fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1223540.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

logs(*synchronous=True*, ***kwargs*)
Get logs from this container.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

logs /containers/<id>/logs

power /containers/<id>/power

`super` is called otherwise.

power(*synchronous=True*, ***kwargs*)
Run a power operation on a container.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

class nailgun.entities.**ActivationKey**(*server_config=None*, ***kwargs*)
A representation of a Activation Key entity.

add_host_collection(*synchronous=True*, ***kwargs*)
Helper for associating host collection with activation key.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

add_subscriptions(*synchronous=True*, ***kwargs*)
Helper for adding subscriptions to activation key.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

content_override(*synchronous=True*, ***kwargs*)
Override the content of an activation key.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

copy(*synchronous=True*, ***kwargs*)
Copy provided activation key.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

add_subscriptions /activation_keys/<id>/add_subscriptions

copy /activation_keys/<id>/copy

content_override /activation_keys/<id>/content_override

product_content /activation_keys/<id>/product_content

releases /activation_keys/<id>/releases

remove_subscriptions /activation_keys/<id>/remove_subscriptions

subscriptions /activation_keys/<id>/subscriptions

`super` is called otherwise.

product_content(*synchronous=True*, ***kwargs*)
Helper for showing content available for activation key.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

remove_host_collection(*synchronous=True*, ***kwargs*)
Helper for disassociating host collection from the activation key.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

remove_subscriptions(*synchronous=True*, ***kwargs*)

Helper for removing subscriptions from an activation key.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

subscriptions(*synchronous=True*, ***kwargs*)

Helper for retrieving subscriptions on an activation key.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

class `nailgun.entities.`**Architecture**(*server_config=None*, ***kwargs*)

A representation of a Architecture entity.

create_payload()

Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

update(*fields=None*)

Fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1234964.

class `nailgun.entities.`**ArfReport**(*server_config=None*, ***kwargs*)

A representation of a Arf Report entity.

Read Arf report ArfReport(id=<id>).read() # Delete Arf report ArfReport(id=<id>).delete() # Download Arf report in HTML ArfReport(id=<id>).download_html()

download_html(*synchronous=True*, ***kwargs*)

Download ARF report in HTML

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)

Extend `nailgun.entity_mixins.Entity.path`. The format of the returned path depends on the value of `which`:

download_html /api/compliance/arf_reports/:id/download_html

Otherwise, call `super`.

class nailgun.entities.**Audit**(*server_config=None*, ***kwargs*)

A representation of Audit entity.

class nailgun.entities.**AuthSourceLDAP**(*server_config=None*, ***kwargs*)

A representation of a AuthSourceLDAP entity.

create_missing()

Possibly set several extra instance attributes.

If `onthefly_register` is set and is true, set the following instance attributes:

- account_password
- account_firstname
- account_lastname
- attr_login
- attr_mail

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)

Do not read the `account_password` attribute. Work around a bug.

For more information, see Bugzilla #1243036.

class nailgun.entities.**Bookmark**(*server_config=None*, ***kwargs*)

A representation of a Bookmark entity.

class nailgun.entities.**Capsule**(*server_config=None*, ***kwargs*)

A representation of a Capsule entity.

content_add_lifecycle_environment(*synchronous=True*, ***kwargs*)

Helper to associate lifecycle environment with capsule

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

content_get_sync(*synchronous=True*, ***kwargs*)
Helper to get content sync status on capsule

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

content_lifecycle_environments(*synchronous=True*, ***kwargs*)
Helper to get all the lifecycle environments, associated with capsule

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

content_sync(*synchronous=True*, ***kwargs*)
Helper to sync content on a capsule

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

content_lifecycle_environments /capsules/<id>/content/lifecycle_environments

content_sync /capsules/<id>/content/sync

`super` is called otherwise.

class `nailgun.entities.`**CommonParameter**(*server_config=None*, ***kwargs*)
A representation of a Common Parameter entity.

class nailgun.entities.**CompliancePolicies**(*server_config=None*, ***kwargs*)
A representation of a Policy entity.

class nailgun.entities.**ComputeAttribute**(*server_config=None*, ***kwargs*)
A representation of a Compute Attribute entity.

class nailgun.entities.**ComputeProfile**(*server_config=None*, ***kwargs*)
A representation of a Compute Profile entity.

class nailgun.entities.**ConfigGroup**(*server_config=None*, ***kwargs*)
A representation of a Config Group entity.

class nailgun.entities.**ConfigTemplate**(*server_config=None*, ***kwargs*)
A representation of a Config Template entity.

build_pxe_default(*synchronous=True*, ***kwargs*)
Helper to build pxe default template.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

clone(*synchronous=True*, ***kwargs*)
Helper to clone an existing provision template

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

create_missing()
Customize the process of auto-generating instance attributes.

Populate `template_kind` if:

- this template is not a snippet, and
- the `template_kind` instance attribute is unset.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

build_pxe_default /config_templates/build_pxe_default

clone /config_templates/clone

revision /config_templates/revision

`super` is called otherwise.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**ContentCredential**(*server_config=None*, ***kwargs*)
A representation of a Content Credential entity.

class nailgun.entities.**ContentUpload**(*server_config=None*, ***kwargs*)
A representation of a Content Upload entity.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Provide a default value for `entity`.

By default, `nailgun.entity_mixins.EntityReadMixin.read` provides a default value for `entity` like so:

```
entity = type(self)()
```

However, *ContentUpload* requires that a `repository` be provided, so this technique will not work. Do this instead:

```
entity = type(self)(repository=self.repository.id)
```

update(*fields=None*, ***kwargs*)
Update the current entity.

Make an HTTP PUT call to `self.path('base')`. Return the response.

Parameters **fields** – An iterable of field names. Only the fields named in this iterable will be updated. No fields are updated if an empty iterable is passed in. All fields are updated if `None` is passed in.

Returns A `requests.response` object.

upload(*filepath*, *filename=None*)
Upload content.

Parameters

- **filepath** – path to the file that should be chunked and uploaded
- **filename** – name of the file on the server, defaults to the last part of the `filepath` if not set

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

Raises *nailgun.entities.APIResponseError* – If the response has a status other than "success".

class nailgun.entities.**ContentView**(*server_config=None*, ***kwargs*)
A representation of a Content View entity.

available_puppet_modules(*synchronous=True*, ***kwargs*)
Get puppet modules available to be added to the content view.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

copy(*synchronous=True*, ***kwargs*)
Clone provided content view.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

delete_from_environment(*environment*, *synchronous=True*)
Delete this content view version from an environment.

This method acts much like *nailgun.entity_mixins.EntityDeleteMixin.delete()*. The documentation on that method describes how the deletion procedure works in general. This method differs only in accepting an `environment` parameter.

Parameters **environment** – A *nailgun.entities.Environment* object. The environment's `id` parameter *must* be specified. As a convenience, an environment ID may be passed in instead of an `Environment` object.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

content_view_puppet_modules /content_views/<id>/content_view_puppet_modules

content_view_versions /content_views/<id>/content_view_versions

publish /content_views/<id>/publish

available_puppet_module_names /content_views/<id>/available_puppet_module_names

`super` is called otherwise.

publish(*synchronous=True*, ***kwargs*)
Helper for publishing an existing content view.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.

- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Fetch an attribute missing from the server's response.

For more information, see Bugzilla #1237257.

Add content_view_component to the response if needed, as *nailgun.entity_mixins.EntityReadMixin.read()* can't initialize content_view_component.

search(*fields=None*, *query=None*, *filters=None*)
Search for entities.

Parameters

- **fields** – A set naming which fields should be used when generating a search query. If `None`, all values on the entity are used. If an empty set, no values are used.
- **query** – A dict containing a raw search query. This is melded in to the generated search query like so: `{generated: query}.update({manual: query})`.
- **filters** – A dict. Used to filter search results locally.

Returns A list of entities, all of type `type(self)`.

class nailgun.entities.**ContentViewComponent**(*server_config=None*, ***kwargs*)
A representation of a Content View Components entity.

add(*synchronous=True*, ***kwargs*)
Add provided Content View Component.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`. The format of the returned path depends on the value of `which`:

add /content_view_components/add

remove /content_view_components/remove

Otherwise, call `super`.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Add composite_content_view to the response if needed, as *nailgun.entity_mixins.EntityReadMixin.read()* can't initialize composite_content_view.

remove(*synchronous=True*, ***kwargs*)
remove provided Content View Component.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

class nailgun.entities.**ContentViewFilterRule**(*server_config=None*, ***kwargs*)
A representation of a Content View Filter Rule entity.

create_payload()
Reset `errata_id` from DB ID to `errata_id`.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Do not read certain fields.

Do not expect the server to return the `content_view_filter` attribute. This has no practical impact, as the attribute must be provided when a *nailgun.entities.ContentViewFilterRule* is instantiated.

Also, ignore any field that is not returned by the server. For more information, see Bugzilla #1238408.

search_payload(*fields=None*, *query=None*)
Reset `errata_id` from DB ID to `errata_id`.

update_payload(*fields=None*)
Reset `errata_id` from DB ID to `errata_id`.

class nailgun.entities.**ContentViewPuppetModule**(*server_config=None*, ***kwargs*)
A representation of a Content View Puppet Module entity.

`content_view` must be passed in when this entity is instantiated.

Raises `TypeError` if `content_view` is not passed in.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Provide a default value for `entity`.

By default, `nailgun.entity_mixins.EntityReadMixin.read provides a default value for ``entity` like so:

```
entity = type(self)()
```

However, *ContentViewPuppetModule* requires that an `content_view` be provided, so this technique will not work. Do this instead:

```
entity = type(self)(content_view=self.content_view.id)
```

class nailgun.entities.**ContentViewVersion**(*server_config=None*, ***kwargs*)
A representation of a Content View Version non-entity.

incremental_update(*synchronous=True*, ***kwargs*)
Helper for incrementally updating a content view version.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

incremental_update /content_view_versions/incremental_update

promote /content_view_versions/<id>/promote

`super` is called otherwise.

promote(*synchronous=True*, ***kwargs*)
Helper for promoting an existing published content view.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

class nailgun.entities.**DiscoveredHost**(*server_config=None*, ***kwargs*)
A representation of a Foreman Discovered Host entity.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

facts(*synchronous=True*, ***kwargs*)
Helper to update facts for discovered host, and create the host.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

facts /discovered_hosts/facts

`super` is called otherwise.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**DiscoveryRule**(*server_config=None*, ***kwargs*)
A representation of a Foreman Discovery Rule entity.

Note: The `search_` field is named as such due to a naming conflict with *nailgun.entity_mixins.Entity.path()*.

---

create(*create_missing=None*)
Do extra work to fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1381129.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

In addition, rename the `search_` field to `search`.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Work around a bug. Rename `search` to `search_`.

For more information on the bug, see Bugzilla #1257255.

update(*fields=None*)
Fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1381129.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**DockerComputeResource**(*server_config=None*, ***kwargs*)
A representation of a Docker Compute Resource entity.

create(*create_missing=None*)
Do extra work to fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1223540.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Do extra work to fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1223540.

Also, do not try to read the "password" field. No value is returned for the field, for obvious reasons.

class nailgun.entities.**DockerHubContainer**(*server_config=None*, ***kwargs*)
A docker container that comes from Docker Hub.

Warning: The `repository_name` field references an image repository on the *Docker Hub <https://hub.docker.com/>*, not a locally created *nailgun.entities.Repository*.

class nailgun.entities.**DockerRegistryContainer**(*server_config=None*, ***kwargs*)
A docker container that comes from custom external registry.

> **Warning:** The `repository_name` field references an image repository on the custom registry, not a locally created *`nailgun.entities.Repository`*.

class nailgun.entities.**Domain**(*server_config=None*, ***kwargs*)
A representation of a Domain entity.

create(*create_missing=None*)
Manually fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1219654.

create_missing()
Customize the process of auto-generating instance attributes.

By default, *`nailgun.entity_fields.StringField.gen_value()`* can produce strings in both lower and upper cases, but domain name should be always in lower case due logical reason.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Deal with weirdly named data returned from the server.

For more information, see Bugzilla #1233245.

update(*fields=None*)
Fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1234999.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**Environment**(*server_config=None*, ***kwargs*)
A representation of a Environment entity.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

list_scparams(*synchronous=True*, ***kwargs*)
List all smart class parameters

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`. The format of the returned path depends on the value of `which`:

smart_class_parameters /api/environments/:environment_id/smart_class_parameters

Otherwise, call `super`.

update(*fields=None*)
Fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1262029.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**Errata**(*server_config=None*, ***kwargs*)
A representation of an Errata entity.

compare(*synchronous=True*, ***kwargs*)
Compare errata from different content view versions

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

compare /katello/api/errata/compare

Otherwise, call `super`.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Following fields are only accessible for filtering search results and are never returned by the server: `content_view_version_id`, `environment_id`, `repository_id`.

class nailgun.entities.**ErratumContentViewFilter**(*server_config=None*, ***kwargs*)
A representation of a Content View Filter of type "erratum".

class nailgun.entities.**ExternalUserGroup**(*server_config=None*, ***kwargs*)
A representation of a External Usergroup entity.

`usergroup` must be passed in when this entity is instantiated.

Raises `TypeError` if `usergroup` is not passed in.

Create external usergroup ExternalUserGroup(name='foobargroup',usergroup=usergroup,auth_source=auth).create() # Read external usergroup ExternalUserGroup(id=<id>, usergroup=usergroup).read() # Delete external usergroup ExternalUserGroup(id=<id>, usergroup=usergroup).delete() # Refresh external usergroup ExternalUserGroup(id=<id>, usergroup=usergroup).refresh()

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

refresh /api/usergroups/:usergroup_id/external_usergroups/:id/refresh

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Ignore usergroup from read and alter auth_source_ldap with auth_source

refresh(*synchronous=True*, ***kwargs*)
Refresh external usergroup.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

class nailgun.entities.**File**(*server_config=None*, ***kwargs*)
A representation of a Package entity.

class nailgun.entities.**Filter**(*server_config=None*, ***kwargs*)
A representation of a Filter entity.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Deal with different named data returned from the server

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**ForemanStatus**(*server_config=None*, ***kwargs*)
A representation of the Foreman Status entity.

class nailgun.entities.**ForemanTask**(*server_config=None*, ***kwargs*)
A representation of a Foreman task.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

bulk_resume /foreman_tasks/api/tasks/bulk_resume

bulk_search /foreman_tasks/api/tasks/bulk_search

summary /foreman_tasks/api/tasks/summary

Otherwise, call `super`.

poll(*poll_rate=None*, *timeout=None*)
Return the status of a task or timeout.

There are several API calls that trigger asynchronous tasks, such as synchronizing a repository, or publishing or promoting a content view. It is possible to check on the status of a task if you know its UUID. This method polls a task once every `poll_rate` seconds and, upon task completion, returns information about that task.

Parameters

- **poll_rate** – Delay between the end of one task check-up and the start of the next check-up. Defaults to `nailgun.entity_mixins.TASK_POLL_RATE`.

- **timeout** – Maximum number of seconds to wait until timing out. Defaults to `nailgun.entity_mixins.TASK_TIMEOUT`.

Returns Information about the asynchronous task.

Raises `nailgun.entity_mixins.TaskTimedOutError` if the task completes with any result other than "success".

Raises `nailgun.entity_mixins.TaskFailedError` if the task finishes with any result other than "success".

Raises `requests.exceptions.HTTPError` If the API returns a message with an HTTP 4XX or 5XX status code.

summary(*synchronous=True*, ***kwargs*)
Helper to view a summary of tasks.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

class nailgun.entities.**GPGKey**(*server_config=None*, ***kwargs*)
A representation of a GPG Key entity.

class nailgun.entities.**Host**(*server_config=None*, ***kwargs*)
A representation of a Host entity.

add_puppetclass(*synchronous=True*, ***kwargs*)
Add a Puppet class to host

Here is an example of how to use this method:: host.add_puppetclass(data={'puppetclass_id': puppet.id})

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

create(*create_missing=None*)
Manually fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1449749.

create_missing()
Create a bogus managed host.

The exact set of attributes that are required varies depending on whether the host is managed or inherits values from a host group and other factors. Unfortunately, the rules for determining which attributes should be filled in are mildly complex, and it is hard to know which scenario a user is aiming for.

Populate the values necessary to create a bogus managed host. The resultant dependency graph will look, in part, like this:

```
     .-> medium --------.
     |-> architecture <-V-.
host -> operatingsystem -|
     |-> ptable <---------'
     |-> domain
     '-> environment
```

If nested entities were passed by *id* (i.e. entity was only initialized and not read, and therefore contains only *id* field) perform additional read request.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

delete_puppetclass(*synchronous=True*, ***kwargs*)
Remove a Puppet class from host

Here is an example of how to use this method:: host.delete_puppetclass(data={'puppetclass_id': puppet.id})

Constructs path: /api/hosts/:hostgroup_id/puppetclass_ids/:id

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

enc(*synchronous=True*, ***kwargs*)
Return external node classifier (ENC) information

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all content decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

errata(*synchronous=True*, ***kwargs*)
List errata available for the host

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all content decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

errata_applicability(*synchronous=True*, ***kwargs*)
Force regenerate errata applicability

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all content decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

errata_apply(*synchronous=True*, ***kwargs*)
Schedule errata for installation

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all content decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

get_facts(*synchronous=True*, ***kwargs*)
List all fact values of a given host

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all content decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

get_values()
Correctly set the `owner_type` attribute.

install_content(*synchronous=True*, ***kwargs*)
Install content on one or more hosts

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all content decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

list_scparams(*synchronous=True*, ***kwargs*)
List all smart class parameters

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

list_smart_variables(*synchronous=True*, ***kwargs*)
List all smart variables

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

module_streams(*synchronous=True*, ***kwargs*)
List module_streams available for the host

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all content decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

owner_type
Return `_owner_type`.

packages(*synchronous=True*, ***kwargs*)
List packages installed on the host

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all content decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)

Extend `nailgun.entity_mixins.Entity.path`. The format of the returned path depends on the value of `which`:

bulk/install_content /api/hosts/:host_id/bulk/install_content

errata /api/hosts/:host_id/errata

power /api/hosts/:host_id/power

errata/apply /api/hosts/:host_id/errata/apply

puppetclass_ids /api/hosts/:host_id/puppetclass_ids

smart_class_parameters /api/hosts/:host_id/smart_class_parameters

smart_variables /api/hosts/:host_id/smart_class_variables

module_streams /api/hosts/:host_id/module_streams

Otherwise, call `super`.

power(*synchronous=True*, ***kwargs*)

Power the host off or on

Parameters **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)

Deal with oddly named and structured data returned by the server.

For more information, see Bugzilla #1235019 and Bugzilla #1449749.

content_facet_attributes are returned only in case any of facet attributes were actually set.

Also add image to the response if needed, as *`nailgun.entity_mixins.EntityReadMixin.read()`* can't initialize image.

search(*fields=None*, *query=None*, *filters=None*)

Search for entities.

Parameters

- **fields** – A set naming which fields should be used when generating a search query. If `None`, all values on the entity are used. If an empty set, no values are used.
- **query** – A dict containing a raw search query. This is melded in to the generated search query like so: `{generated: query}.update({manual: query})`.
- **filters** – A dict. Used to filter search results locally.

Returns A list of entities, all of type `type(self)`.

update(*fields=None*)
Fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1235049.

> **Warning:** Several attributes cannot be updated. See Bugzilla #1235041.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

upload_facts(*synchronous=True*, ***kwargs*)
Upload facts for a host, creating the host if required

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all content decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

class nailgun.entities.**HostCollection**(*server_config=None*, ***kwargs*)
A representation of a Host Collection entity.

create(*create_missing=None*)
Manually fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1654383.

create_payload()
Rename `system_ids` to `system_uuids`.

update_payload(*fields=None*)
Rename `system_ids` to `system_uuids`.

class nailgun.entities.**HostCollectionErrata**(*server_config=None*, ***kwargs*)
A representation of a Host Collection Errata entity.

class nailgun.entities.**HostCollectionPackage**(*server_config=None*, ***kwargs*)
A representation of a Host Collection Package entity.

class nailgun.entities.**HostGroup**(*server_config=None*, ***kwargs*)
A representation of a Host Group entity.

add_puppetclass(*synchronous=True*, ***kwargs*)
Add a Puppet class to host group

Here is an example of how to use this method:: hostgroup.add_puppetclass(data={'puppetclass_id': puppet.id})

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

clone(*synchronous=True*, ***kwargs*)
Helper to clone an existing host group

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

create(*create_missing=None*)
Do extra work to fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1235377.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

delete_puppetclass(*synchronous=True*, ***kwargs*)
Remove a Puppet class from host group

Here is an example of how to use this method:: hostgroup.delete_puppetclass(data={'puppetclass_id': puppet.id})

Constructs path: /api/hostgroups/:hostgroup_id/puppetclass_ids/:id

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

list_scparams(*synchronous=True*, ***kwargs*)
List all smart class parameters

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

list_smart_variables(*synchronous=True*, ***kwargs*)
List all smart variables

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`. The format of the returned path depends on the value of `which`:

clone /api/hostgroups/:hostgroup_id/clone

puppetclass_ids /api/hostgroups/:hostgroup_id/puppetclass_ids

smart_class_parameters /api/hostgroups/:hostgroup_id/smart_class_parameters

smart_class_variables /api/hostgroups/:hostgroup_id/smart_variables

Otherwise, call `super`.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Deal with several bugs.

For more information, see:

- Bugzilla #1235377
- Bugzilla #1235379
- Bugzilla #1450379

update(*fields=None*)
Deal with several bugs.

For more information, see:

- Bugzilla #1235378
- Bugzilla #1235380

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class `nailgun.entities.`**HostPackage**(*server_config=None*, ***kwargs*)
A representation of a Host Package entity.

class `nailgun.entities.`**HostSubscription**(*server_config=None*, ***kwargs*)
A representation of a Host Subscription entity.

add_subscriptions(*synchronous=True*, ***kwargs*)
Helper for adding subscriptions to host

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)

Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

add_subscriptions /hosts/<id>/add_subscriptions

remove_subscriptions /hosts/<id>/remove_subscriptions

`super` is called otherwise.

remove_subscriptions(*synchronous=True*, ***kwargs*)

Helper for removing subscriptions from host

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

class nailgun.entities.**Image**(*server_config=None*, ***kwargs*)

A representation of a Image entity.

create_payload()

Wrap submitted data within an extra dict.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)

Provide a default value for `entity`.

By default, `nailgun.entity_mixins.EntityReadMixin.read` provides a default value for `entity` like so:

```
entity = type(self)()
```

However, *Image* requires that an `compute_resource` be provided, so this technique will not work. Do this instead:

```
entity = type(self)(compute_resource=self.compute_resource.id)
```

update_payload(*fields=None*)

Wrap submitted data within an extra dict.

class nailgun.entities.**Interface**(*server_config=None*, ***kwargs*)

A representation of a Interface entity.

`host` must be passed in when this entity is instantiated.

Raises `TypeError` if `host` is not passed in.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Provide a default value for `entity`.

By default, `nailgun.entity_mixins.EntityReadMixin.read` provides a default value for `entity` like so:

```
entity = type(self)()
```

However, *Interface* requires that a `host` must be provided, so this technique will not work. Do this instead:

```
entity = type(self)(host=self.host)
```

In addition, some of interface fields are specific to its `type` and are never returned for different `type` so ignoring all the redundant fields.

search_normalize(*results*)
Append host id to search results to be able to initialize found *Interface* successfully

class nailgun.entities.**JobInvocation**(*server_config=None*, ***kwargs*)
A representation of a Job invocation entity.

run(*synchronous=True*, ***kwargs*)
Helper to run existing job template

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests. 'data' supports next fields:

  required: job_template_id/feature, targeting_type, search_query/bookmark_id, inputs

  optional: description_format, concurrency_control scheduling, ssh, recurrence, execution_timeout_interval

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

class nailgun.entities.**JobTemplate**(*server_config=None*, ***kwargs*)
A representation of a Job Template entity.

create_payload()
Wrap submitted data within an extra dict.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Ignore the template inputs when initially reading the job template. Look up each TemplateInput entity separately and afterwords add them to the JobTemplate entity.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**KatelloStatus**(*server_config=None*, ***kwargs*)
A representation of a Status entity.

class nailgun.entities.**LibvirtComputeResource**(*server_config=None*, ***kwargs*)
A representation of a Libvirt Compute Resource entity.

class nailgun.entities.**LifecycleEnvironment**(*server_config=None*, ***kwargs*)
A representation of a Lifecycle Environment entity.

create_missing()
Automatically populate additional instance attributes.

When a new lifecycle environment is created, it must either:

- Reference a parent lifecycle environment in the tree of lifecycle environments via the `prior` field, or
- have a name of "Library".

Within a given organization, there can only be a single lifecycle environment with a name of 'Library'. This lifecycle environment is at the root of a tree of lifecycle environments, so its `prior` field is blank.

This method finds the 'Library' lifecycle environment within the current organization and points to it via the `prior` field. This is not done if the current lifecycle environment has a name of 'Library'.

create_payload()
Rename the payload key "prior_id" to "prior".

For more information, see Bugzilla #1238757.

class nailgun.entities.**Location**(*server_config=None*, ***kwargs*)
A representation of a Location entity.

create(*create_missing=None*)
Manually fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1216236.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Work around a bug in the server's response.

Do not read the `realm` attribute. See Bugzilla #1216234.

update(*fields=None*)
Fetch a complete set of attributes for this entity.

Beware of Bugzilla #1236008: "Cannot use HTTP PUT to associate location with media"

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**Media**(*server_config=None*, ***kwargs*)
A representation of a Media entity.

Note: The `path_` field is named as such due to a naming conflict with *nailgun.entity_mixins.Entity.path()*.

---

create(*create_missing=None*)
Manually fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1219653.

create_payload()
Wrap submitted data within an extra dict and rename `path_`.

For more information on wrapping submitted data, see Bugzilla #1151220.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Rename `path` to `path_`.

update(*fields=None*)
Fetch a complete set of attributes for this entity.

Beware of Bugzilla #1261047: "PUT /api/v2/medium/:id doesn't return all attributes"

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**Model**(*server_config=None*, ***kwargs*)
A representation of a Model entity.

class nailgun.entities.**ModuleStream**(*server_config=None*, ***kwargs*)
A representation of a Module Stream entity.

class nailgun.entities.**OSDefaultTemplate**(*server_config=None*, ***kwargs*)
A representation of a OS Default Template entity.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Fetch as many attributes as possible for this entity. Since operatingsystem is needed to instanciate, prepare the entity accordingly.

update_payload(*fields=None*)
Wrap payload in `os_default_template` relates to Redmine #21169.

class nailgun.entities.**OVirtComputeResource**(*server_config=None*, ***kwargs*)
A representation for compute resources with Ovirt provider

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Make sure, `password` is in the ignore list for read

class nailgun.entities.**OperatingSystem**(*server_config=None*, ***kwargs*)
A representation of a Operating System entity.

`major` is listed as a string field in the API docs, but only numeric values are accepted, and they may be no longer than 5 digits long. Also see Bugzilla #1122261.

`title` field is valid despite not being listed in the API docs. This may be changed in future as both `title` and `description` fields share similar purpose. See Bugzilla #1290359 for more details.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**OperatingSystemParameter**(*server_config=None*, ***kwargs*)
A representation of a parameter for an operating system.

`organization` must be passed in when this entity is instantiated.

Raises `TypeError` if `operatingsystem` is not passed in.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Provide a default value for `entity`.

By default, `nailgun.entity_mixins.EntityReadMixin.read` provides a default value for `entity` like so:

```
entity = type(self)()
```

However, *OperatingSystemParameter* requires that an `operatingsystem` be provided, so this technique will not work. Do this instead:

```
entity = type(self)(operatingsystem=self.operatingsystem.id)
```

class nailgun.entities.**Organization**(*server_config=None*, ***kwargs*)
A representation of an Organization entity.

create(*create_missing=None*)
Do extra work to fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1230873.

download_debug_certificate(*synchronous=True*, ***kwargs*)
Get debug certificate for particular organization.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all content decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

download_debug_certificate /organizations/<id>/download_debug_certificate

subscriptions /organizations/<id>/subscriptions

subscriptions/upload /organizations/<id>/subscriptions/upload

subscriptions/delete_manifest /organizations/<id>/subscriptions/delete_manifest

subscriptions/refresh_manifest /organizations/<id>/subscriptions/refresh_manifest

sync_plans /organizations/<id>/sync_plans

Otherwise, call `super`.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Fetch as many attributes as possible for this entity.

Do not read the `realm` attribute. For more information, see Bugzilla #1230873.

update(*fields=None*)
Fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1232871.

> **Warning:** Several attributes cannot be updated. See Bugzilla #1230865.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**OverrideValue**(*server_config=None*, ***kwargs*)
A representation of a Override Value entity.

create_payload()
Remove `smart_class_parameter_id` or `smart_variable_id`

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Provide a default value for `entity`.

By default, `nailgun.entity_mixins.EntityReadMixin.read provides a default value for ``entity` like so:

```
entity = type(self)()
```

However, *OverrideValue* requires that an `smart_class_parameter` or `smart_varaiable` be provided, so this technique will not work. Do this instead:

```
entity = type(self)(
    smart_class_parameter=self.smart_class_parameter)
entity = type(self)(smart_variable=self.smart_variable)
```

class nailgun.entities.**Package**(*server_config=None*, ***kwargs*)
A representation of a Package entity.

class nailgun.entities.**PackageGroup**(*server_config=None*, ***kwargs*)
A representation of a Package Group entity.

class nailgun.entities.**PackageGroupContentViewFilter**(*server_config=None*, ***kwargs*)
A representation of a Content View Filter of type "package_group".

class nailgun.entities.**Parameter**(*server_config=None*, ***kwargs*)
A representation of a Parameter entity.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Ignore path related fields as they're never returned by the server and are only added to entity to be able to use proper path.

class nailgun.entities.**PartitionTable**(*server_config=None*, ***kwargs*)
A representation of a Partition Table entity.

Currently a Partition Table with one character in name cannot be created. For more information, see Bugzilla #1229384.

Note: Having a name length of 2 had failures again. Updating the length to 4.

class nailgun.entities.**Permission**(*server_config=None*, ***kwargs*)
A representation of a Permission entity.

class nailgun.entities.**Ping**(*server_config=None*, ***kwargs*)
A representation of a Ping entity.

class nailgun.entities.**Product**(*server_config=None*, ***kwargs*)
A representation of a Product entity.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

sync /products/<product_id>/sync

`super` is called otherwise.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Fetch an attribute missing from the server's response.

Also add sync plan to the responce if needed, as *nailgun.entity_mixins.EntityReadMixin.read()* can't initialize sync plan.

For more information, see Bugzilla #1237283 and nailgun#261.

search(*fields=None*, *query=None*, *filters=None*)
Search for entities with missing attribute

Parameters

- **fields** – A set naming which fields should be used when generating a search query. If `None`, all values on the entity are used. If an empty set, no values are used.
- **query** – A dict containing a raw search query. This is melded in to the generated search query like so: `{generated: query}.update({manual: query})`.
- **filters** – A dict. Used to filter search results locally.

Returns A list of entities, all of type `type(self)`.

For more information, see Bugzilla #1237283 and nailgun#261.

sync(*synchronous=True*, ***kwargs*)
Synchronize *repositories* in this product.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

class nailgun.entities.**ProvisioningTemplate**(*server_config=None*, ***kwargs*)
A representation of a Provisioning Template entity.

build_pxe_default(*synchronous=True*, ***kwargs*)
Helper to build pxe default template.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

clone(*synchronous=True*, ***kwargs*)
Helper to clone an existing provision template

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

create_missing()
Customize the process of auto-generating instance attributes.

Populate `template_kind` if:

- this template is not a snippet, and
- the `template_kind` instance attribute is unset.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

build_pxe_default /provisioning_templates/build_pxe_default

clone /provisioning_templates/clone

revision /provisioning_templates/revision

`super` is called otherwise.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**PuppetClass**(*server_config=None*, ***kwargs*)
A representation of a Puppet Class entity.

list_scparams(*synchronous=True*, ***kwargs*)
List of smart class parameters for a specific Puppet class

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

list_smart_variables(*synchronous=True*, ***kwargs*)
List all smart variables

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)

Extend `nailgun.entity_mixins.Entity.path`. The format of the returned path depends on the value of `which`:

smart_class_parameters /api/puppetclasses/:puppetclass_id/smart_class_parameters

Otherwise, call `super`.

search_normalize(*results*)

Flattens results. *nailgun.entity_mixins.EntitySearchMixin.search_normalize()* expects structure like list(dict_1(name: class_1), dict_2(name: class_2)), while Puppet Class entity returns dictionary with lists of subclasses split by main puppet class.

class nailgun.entities.**PuppetModule**(*server_config=None*, ***kwargs*)

A representation of a Puppet Module entity.

class nailgun.entities.**RHCIDeployment**(*server_config=None*, ***kwargs*)

A representation of a RHCI deployment entity.

deploy(*synchronous=True*, ***kwargs*)

Kickoff the RHCI deployment.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)

Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

deploy /deployments/<id>/deploy

`super` is called otherwise.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)

Normalize the data returned by the server.

The server's JSON response is in this form:

```
{
    "organizations": [...],
    "lifecycle_environments": [...],
    "discovered_hosts": [...],
    "deployment": {...},
}
```

The inner "deployment" dict contains information about this entity. The response does not contain a value for the `rhev_engine_host` argument.

class nailgun.entities.**RPMContentViewFilter**(*server_config=None*, ***kwargs*)
A representation of a Content View Filter of type "rpm".

class nailgun.entities.**Realm**(*server_config=None*, ***kwargs*)
A representation of a Realm entity.

create(*create_missing=None*)
Do extra work to fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1232855.

class nailgun.entities.**RecurringLogic**(*server_config=None*, ***kwargs*)
A representation of a Recurring logic entity.

cancel(*synchronous=True*, ***kwargs*)
Helper for canceling a recurring logic

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.RecurringLogic.path`. The format of the returned path depends on the value of `which`:

cancel /foreman_tasks/api/recurring_logics/:id/cancel

Otherwise, call `super`.

class nailgun.entities.**Registry**(*server_config=None*, ***kwargs*)
A representation of a Registry entity.

create(*create_missing=None*)
Manually fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1479391.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Do not read the `password` argument.

update(*fields=None*)
Fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1479391.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**Report**(*server_config=None*, ***kwargs*)
A representation of a Report entity.

class nailgun.entities.**Repository**(*server_config=None*, ***kwargs*)
A representation of a Repository entity.

create_missing()
Conditionally mark `docker_upstream_name` as required.

Mark `docker_upstream_name` as required if `content_type` is "docker".

errata(*synchronous=True*, ***kwargs*)
List errata inside repository.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

files(*synchronous=True*, ***kwargs*)
List files associated with repository

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

import_uploads(*uploads=None*, *upload_ids=None*, *synchronous=True*, ***kwargs*)
Import uploads into a repository

It expects either a list of uploads or upload_ids (but not both).

Parameters

- **uploads** – Array of uploads to be imported
- **upload_ids** – Array of upload ids to be imported
- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.

- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

module_streams(*synchronous=True*, ***kwargs*)
List module_streams associated with repository

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

packages(*synchronous=True*, ***kwargs*)
List packages associated with repository

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

errata /repositories/<id>/errata

files /repositories/<id>/files

packages /repositories/<id>/packages

module_streams /repositories/<id>/module_streams

puppet_modules /repositories/<id>/puppet_modules

remove_content /repositories/<id>/remove_content

sync /repositories/<id>/sync

upload_content /repositories/<id>/upload_content

import_uploads /repositories/<id>/import_uploads

`super` is called otherwise.

puppet_modules(*synchronous=True*, ***kwargs*)
"List puppet modules associated with repository

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)

Ignore `organization` field as it's never returned by the server and is only added to entity to be able to use organization path dependent helpers and also upstream_password as it is not returned for security reasons.

remove_content(*synchronous=True*, ***kwargs*)

Remove content from a repository

It expects packages/puppet modules/docker manifests ids sent as data. Here is an example of how to use this method:

```
repository.remove_content(data={'ids': [package.id]})
```

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

sync(*synchronous=True*, ***kwargs*)

Helper for syncing an existing repository.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

upload_content(*synchronous=True*, ***kwargs*)

Upload a file or files to the current repository.

Here is an example of how to upload content:

```
with open('my_content.rpm') as content:
    repo.upload_content(files={'content': content})
```

This method accepts the same keyword arguments as Requests. As a result, the following examples can be adapted for use here:

- POST a Multipart-Encoded File
- POST Multiple Multipart-Encoded Files

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

Raises ***nailgun.entities.APIResponseError*** – If the response has a status other than "success".

class nailgun.entities.**RepositorySet**(*server_config=None*, ***kwargs*)
A representation of a Repository Set entity

available_repositories(***kwargs*)
Lists available repositories for the repository set

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

disable(*synchronous=True*, ***kwargs*)
Disables the RedHat Repository

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

enable(*synchronous=True*, ***kwargs*)
Enables the RedHat Repository

RedHat Repos needs to be enabled first, so that we can sync it.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.

- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)

Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

available_repositories /repository_sets/<id>/available_repositories

enable /repository_sets/<id>/enable

disable /repository_sets/<id>/disable

`super` is called otherwise.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)

Provide a default value for `entity`.

By default, `nailgun.entity_mixins.EntityReadMixin.read` provides a default value for `entity` like so:

```
entity = type(self)()
```

However, *RepositorySet* requires that a `product` be provided, so this technique will not work. Do this instead:

```
entity = type(self)(product=self.product.id)
```

class nailgun.entities.**Role**(*server_config=None*, ***kwargs*)

A representation of a Role entity.

clone(*synchronous=True*, ***kwargs*)

Helper to clone an existing Role

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

create_payload()

Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

path(*which=None*)

Extend `nailgun.entity_mixins.Entity.path`. The format of the returned path depends on the value of `which`:

clone /api/roles/:role_id/clone

Otherwise, call `super`.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**RoleLDAPGroups**(*server_config=None*, ***kwargs*)
A representation of a Role LDAP Groups entity.

class nailgun.entities.**SSHKey**(*server_config=None*, ***kwargs*)
A representation of a SSH Key entity.

`user` must be passed in when this entity is instantiated.

Raises `TypeError` if `user` is not passed in.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Provide a default value for `entity`.

By default, `nailgun.entity_mixins.EntityReadMixin.read` provides a default value for `entity` like so:

```
entity = type(self)()
```

However, *SSHKey* requires that an `user` be provided, so this technique will not work. Do this instead:

```
entity = type(self)(user=self.user.id)
```

search_normalize(*results*)
Append user id to search results to be able to initialize found *User* successfully

class nailgun.entities.**Setting**(*server_config=None*, ***kwargs*)
A representation of a Setting entity.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**SmartClassParameters**(*server_config=None*, ***kwargs*)
A representation of a Smart Class Parameters.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Do not read the `hidden_value` attribute.

class nailgun.entities.**SmartProxy**(*server_config=None*, ***kwargs*)
A representation of a Smart Proxy entity.

import_puppetclasses(*synchronous=True*, ***kwargs*)
Import puppet classes from puppet Capsule.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`. The format of the returned path depends on the value of `which`:

refresh /api/smart_proxies/:id/refresh

Otherwise, call `super`.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Ignore `download_policy` field as it's never returned by the server.

For more information, see Bugzilla #1486609.

refresh(*synchronous=True*, ***kwargs*)
Refresh Capsule features

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

update(*fields=None*)
Fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1262037.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**SmartVariable**(*server_config=None*, ***kwargs*)
A representation of a Smart Variable entity.

create_payload()
Wrap submitted data within an extra dict.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Do not read the `hidden_value` attribute.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**Status**(*server_config=None*, ***kwargs*)
A representation of a Status entity.

class nailgun.entities.**Subnet**(*server_config=None*, ***kwargs*)
A representation of a Subnet entity.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

In addition, rename the `from_` field to `from`.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Fetch as many attributes as possible for this entity.

Do not read the `discovery` attribute. For more information, see Bugzilla #1217146.

In addition, rename the `from_` field to `from`.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**Subscription**(*server_config=None*, ***kwargs*)
A representation of a Subscription entity.

delete_manifest(*synchronous=True*, ***kwargs*)
Delete manifest from Red Hat provider.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

manifest_history(*synchronous=True*, ***kwargs*)
Obtain manifest history for subscriptions.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

delete_manifest /katello/api/v2/organizations/:organization_id/subscriptions/delete_manifest

manifest_history /katello/api/v2/organizations/:organization_id/subscriptions/manifest_history

refresh_manifest /katello/api/v2/organizations/:organization_id/subscriptions/refresh_manifest

upload /katello/api/v2/organizations/:organization_id/subscriptions/upload

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Ignore `organization` field as it's never returned by the server and is only added to entity to be able to use organization path dependent helpers.

refresh_manifest(*synchronous=True*, ***kwargs*)
Refresh previously imported manifest for Red Hat provider.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

upload(*synchronous=True*, ***kwargs*)
Upload a subscription manifest.

Here is an example of how to use this method:

```
with open('my_manifest.zip') as manifest:
    sub.upload({'organization_id': org.id}, manifest)
```

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

class nailgun.entities.**SyncPlan**(*server_config=None*, ***kwargs*)
A representation of a Sync Plan entity.

`organization` must be passed in when this entity is instantiated.

Raises `TypeError` if `organization` is not passed in.

add_products(*synchronous=True*, ***kwargs*)
Add products to this sync plan.

Note: The `synchronous` argument has no effect in certain versions of Satellite. See Bugzilla #1199150.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

create_payload()
Convert `sync_date` to a string.

The `sync_date` instance attribute on the current object is not affected. However, the `'sync_date'` key in the dict returned by `create_payload` is a string.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

add_products /katello/api/v2/organizations/:organization_id/sync_plans/:sync_plan_id/add_products

remove_products /katello/api/v2/organizations/:organization_id/sync_plans/:sync_plan_id/remove_products

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Provide a default value for `entity`.

By default, `nailgun.entity_mixins.EntityReadMixin.read` provides a default value for `entity` like so:

```
entity = type(self)()
```

However, *SyncPlan* requires that an `organization` be provided, so this technique will not work. Do this instead:

```
entity = type(self)(organization=self.organization.id)
```

remove_products(*synchronous=True*, ***kwargs*)
Remove products from this sync plan.

Note: The `synchronous` argument has no effect in certain versions of Satellite. See Bugzilla #1199150.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

update_payload(*fields=None*)
Convert `sync_date` to a string if datetime object provided.

class nailgun.entities.**System**(*server_config=None*, ***kwargs*)
A representation of a System entity.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

This method contains a workaround for Bugzilla #1202917.

Most entities are uniquely identified by an ID. `System` is a bit different: it has both an ID and a UUID, and the UUID is used to uniquely identify a `System`.

Return a path in the format `katello/api/v2/systems/<uuid>` if a UUID is available and:

- `which is None`, or
- `which == 'this'`.

Finally, return a path in the form `katello/api/v2/systems/<uuid>/subscriptions` if `'subscriptions'` is passed in.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Fetch as many attributes as possible for this entity.

Do not read the `facts`, `organization` or `type` attributes. For more information, see Bugzilla #1202917.

class nailgun.entities.**SystemPackage**(*server_config=None*, ***kwargs*)
A representation of a System Package entity.

class nailgun.entities.**Template**(*server_config=None*, ***kwargs*)
A representation of a Template entity.

exports(*synchronous=True*, ***kwargs*)
Helper to export templates

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

imports(*synchronous=True*, ***kwargs*)
Helper to import templates

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

import /templates/import

export /templates/export

class nailgun.entities.**TemplateCombination**(*server_config=None*, ***kwargs*)
A representation of a Template Combination entity.

class nailgun.entities.**TemplateInput**(*server_config=None*, ***kwargs*)
A representation of a Template Input entity.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Create a JobTemplate object before calling read() ignore 'advanced'

class nailgun.entities.**TemplateKind**(*server_config=None*, ***kwargs*)
A representation of a Template Kind entity.

Unusually, the `/api/v2/template_kinds/:id` path is totally unsupported.

class nailgun.entities.**User**(*server_config=None*, ***kwargs*)
A representation of a User entity.

The LDAP authentication source with an ID of 1 is internal. It is nearly guaranteed to exist and be functioning. Thus, `auth_source` is set to "1" by default for a practical reason: it is much easier to use internal authentication than to spawn LDAP authentication servers for each new user.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Do not read the `password` argument.

update(*fields=None*)
Fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1235012.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

class nailgun.entities.**UserGroup**(*server_config=None*, ***kwargs*)
A representation of a User Group entity.

create(*create_missing=None*)
Do extra work to fetch a complete set of attributes for this entity.

For more information, see Bugzilla #1301658.

create_payload()
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Work around Redmine #9594.

An HTTP GET request to `path('self')` does not return the `admin` attribute, even though it should. Also see Bugzilla #1197871.

update_payload(*fields=None*)
Wrap submitted data within an extra dict.

For more information, see Bugzilla #1151220.

class nailgun.entities.**VMWareComputeResource**(*server_config=None*, ***kwargs*)
A representation for compute resources with Vmware provider

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Make sure, `password` is in the ignore list for read

class nailgun.entities.**VirtWhoConfig**(*server_config=None*, ***kwargs*)
A representation of a VirtWho Config entity.

create_payload()
Wraps config in extra dict

deploy_script(*synchronous=True*, ***kwargs*)
Helper for Config's deploy_script method.

Parameters

- **synchronous** – What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return the server's response otherwise.
- **kwargs** – Arguments to pass to requests.

Returns The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` If the server responds with an HTTP 4XX or 5XX message.

path(*which=None*)
Extend `nailgun.entity_mixins.Entity.path`.

The format of the returned path depends on the value of `which`:

deploy_script /foreman_virt_who_configure/api/v2/configs/:id/deploy_script

`super` is called otherwise.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Override *nailgun.entity_mixins.EntityReadMixin.read()* to ignore the `hypervisor_password`

update_payload(*fields=None*)
Wraps config in extra dict

2.1.2 nailgun.entity_mixins

Defines a set of mixins that provide tools for interacting with entities.

exception nailgun.entity_mixins.**BadValueError**
Indicates that an inappropriate value was assigned to an entity.

nailgun.entity_mixins.**CREATE_MISSING = False**
Used by *nailgun.entity_mixins.EntityCreateMixin.create_raw()*.

This is the default value for the `create_missing` argument to *nailgun.entity_mixins.EntityCreateMixin.create_raw()*. Keep in mind that this variable also affects methods which call `create_raw`, such as *nailgun.entity_mixins.EntityCreateMixin.create_json()*.

nailgun.entity_mixins.**DEFAULT_SERVER_CONFIG = None**
A *nailgun.config.ServerConfig* object.

Used by *nailgun.entity_mixins.Entity*.

class nailgun.entity_mixins.**Entity**(*server_config=None*, ***kwargs*)
A representation of a logically related set of API paths.

This class is rather useless as is, and it is intended to be subclassed. Subclasses can specify two useful types of information:

- fields
- metadata

Fields and metadata are represented by the `_fields` and `_meta` instance attributes, respectively. Here is an example of how to define and instantiate an entity:

```
>>> class User(Entity):
...     def __init__(self, server_config=None, **kwargs):
...         self._fields = {
```

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```
...             'name': StringField(),
...             'supervisor': OneToOneField('User'),
...             'subordinate': OneToManyField('User'),
...         }
...         self._meta = {'api_path': 'api/users'}
...         return super(User, self).__init__(server_config, **kwargs)
...
>>> user = User(
...     name='Alice',
...     supervisor=User(id=1),
...     subordinate=[User(id=3), User(id=4)],
... )
>>> user.name == 'Alice'
True
>>> user.supervisor.id = 1
True
```

The canonical procedure for initializing foreign key fields, shown above, is powerful but verbose. It is tiresome to write statements such as `[User(id=3), User(id=4)]`. As a convenience, entity IDs may be given:

```
>>> User(name='Alice', supervisor=1, subordinate=[3, 4])
>>> user.name == 'Alice'
True
>>> user.supervisor.id = 1
True
```

An entity object is useless if you are unable to use it to communicate with a server. The solution is to provide a *nailgun.config.ServerConfig* when instantiating a new entity.

1. If the `server_config` argument is specified, then that is used.
2. Otherwise, if *nailgun.entity_mixins.DEFAULT_SERVER_CONFIG* is set, then that is used.
3. Otherwise, call *nailgun.config.ServerConfig.get()*.

An entity's server configuration is stored as a private instance variaable and is used by mixin methods, such as *nailgun.entity_mixins.Entity.path()*. For more information on server configuration objects, see *nailgun.config.BaseServerConfig*.

Raises

- ***nailgun.entity_mixins.NoSuchFieldError*** – If a value is assigned to a non-existent field.
- ***nailgun.entity_mixins.BadValueError*** – If an inappropriate value is assigned to a field.

compare(*other*, *filter_fcn=None*)

Returns True if properties can be compared in terms of eq. Entity's Fields can be filtered accordingly to 'filter_fcn'. This callable receives field's name as first parameter and field itself as second parameter. It must return True if field's value should be included on comparison and False otherwise. If not provided field's marked as unique will not be compared by default. 'id' and 'name' are examples of unique fields commonly ignored. Check Entities fields for fields marked with 'unique=True'

Parameters

- **other** – entity to compare
- **filter_fcn** – callable

Returns boolean

get_fields()
Return a copy of the fields on the current object.

Returns A dict mapping field names to :class‘nailgun.entity_fields.Field‘ objects.

get_values()
Return a copy of field values on the current object.

This method is almost identical to `vars(self).copy()`. However, only instance attributes that correspond to a field are included in the returned dict.

Returns A dict mapping field names to user-provided values.

path(*which=None*)
Return the path to the current entity.

Return the path to base entities of this entity's type if:

- `which` is `'base'`, or
- `which` is `None` and instance attribute `id` is unset.

Return the path to this exact entity if instance attribute `id` is set and:

- `which` is `'self'`, or
- `which` is `None`.

Raise *NoSuchPathError* otherwise.

Child classes may choose to extend this method, especially if a child entity offers more than the two URLs supported by default. If extended, then the extending class should check for custom parameters before calling `super`:

```
def path(self, which):
    if which == 'custom':
        return urljoin(...)
    super(ChildEntity, self).__init__(which)
```

This will allow the extending method to accept a custom parameter without accidentally raising a *NoSuchPathError*.

Parameters **which** – A string. Optional. Valid arguments are 'self' and 'base'.

Returns A string. A fully qualified URL.

Raises ***nailgun.entity_mixins.NoSuchPathError*** – If no path can be built.

to_json()
Create a JSON encoded string with Entity properties. Ex:

```
>>> from nailgun import entities, config
>>> kwargs = {
...          'id': 1,
...          'name': 'Nailgun Org',
...      }
>>> org = entities.Organization(config.ServerConfig('foo'), \*\*kwargs)
>>> org.to_json()
'{"id": 1, "name": "Nailgun Org"}'
```

Returns str

to_json_dict(*filter_fcn=None*)
Create a dict with Entity properties for json encoding. It can be overridden by subclasses for each standard serialization doesn't work. By default it call _to_json_dict on OneToOne fields and build a list calling the same method on each OneToMany object's fields.

Fields can be filtered accordingly to 'filter_fcn'. This callable receives field's name as first parameter and fields itself as second parameter. It must return True if field's value should be included on dict and False otherwise. If not provided field will not be filtered.

Returns dct

class nailgun.entity_mixins.**EntityCreateMixin**
This mixin provides the ability to create an entity.

The methods provided by this class work together. The call tree looks like this:

```
create
└── create_json
    └── create_raw
        ├── create_missing
        └── create_payload
```

In short, here is what the methods do:

create_missing() Populate required fields with random values. Required fields that already have a value are not populated. This method is not called by default.

create_payload() Assemble a payload of data that can be encoded and sent to the server.

create_raw() Make an HTTP POST request to the server, including the payload.

create_json() Check the server's response for errors and decode the response.

create() Create a *nailgun.entity_mixins.Entity* object representing the created entity and populate its fields with data returned from the server.

See the individual methods for more detailed information.

create(*create_missing=None*)
Create an entity.

Call *create_json()*, use the response to populate a new object of type `type(self)` and return that object.

This method requires that a method named "read" be available on the current object. A method named "read" will be available if *EntityReadMixin* is present in the inheritance tree, and using the method provided by that mixin is the recommended technique for making a "read" method available.

This method makes use of *EntityReadMixin.read()* for two reasons. First, calling that method is simply convenient. Second, the server frequently returns weirdly structured, inconsistently named or straight-up broken responses, and quite a bit of effort has gone in to decoding server responses so *EntityReadMixin.read()* can function correctly. Calling `read` allows this method to re-use the decoding work that has been done for that method.

Returns An instance of type `type(self)`.

Return type *nailgun.entity_mixins.Entity*

Raises `AttributeError` if a method named "read" is not available on the current object.

create_json(*create_missing=None*)
Create an entity.

Call *create_raw()*. Check the response status code, decode JSON and return the decoded JSON as a dict.

Returns A dict. The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` if the response has an HTTP 4XX or 5XX status code.

Raises `ValueError` If the response JSON can not be decoded.

create_missing()
Automagically populate all required instance attributes.

Iterate through the set of all required class *nailgun.entity_fields.Field* defined on `type(self)` and create a corresponding instance attribute if none exists. Subclasses should override this method if there is some relationship between two required fields.

Returns Nothing. This method relies on side-effects.

create_payload()
Create a payload of values that can be sent to the server.

See *_payload()*.

create_raw(*create_missing=None*)
Create an entity.

Possibly call *create_missing()*. Then make an HTTP POST call to `self.path('base')`. The request payload consists of whatever is returned by *create_payload()*. Return the response.

Parameters **create_missing** – Should *create_missing()* be called? In other words, should values be generated for required, empty fields? Defaults to *nailgun.entity_mixins.CREATE_MISSING*.

Returns A `requests.response` object.

class nailgun.entity_mixins.**EntityDeleteMixin**
This mixin provides the ability to delete an entity.

The methods provided by this class work together. The call tree looks like this:

```
delete → delete_raw
```

In short, here is what the methods do:

delete_raw() Make an HTTP DELETE request to the server.

delete() Check the server's response for errors and decode the response.

delete(*synchronous=True*)
Delete the current entity.

Call *delete_raw()* and check for an HTTP 4XX or 5XX response. Return either the JSON-decoded response or information about a completed foreman task.

Parameters **synchronous** – A boolean. What should happen if the server returns an HTTP 202 (accepted) status code? Wait for the task to complete if `True`. Immediately return a response otherwise.

Returns A dict. Either the JSON-decoded response or information about a foreman task.

Raises `requests.exceptions.HTTPError` if the response has an HTTP 4XX or 5XX status code.

Raises `ValueError` If an HTTP 202 response is received and the response JSON can not be decoded.

Raises ***nailgun.entity_mixins.TaskTimedOutError*** – If an HTTP 202 response is received, `synchronous is True` and the task times out.

delete_raw()
Delete the current entity.

Make an HTTP DELETE call to `self.path('base')`. Return the response.

Returns A `requests.response` object.

class nailgun.entity_mixins.**EntityReadMixin**
This mixin provides the ability to read an entity.

The methods provided by this class work together. The call tree looks like this:

```
read → read_json → read_raw
```

In short, here is what the methods do:

read_raw() Make an HTTP GET request to the server.

read_json() Check the server's response for errors and decode the response.

read() Create a *nailgun.entity_mixins.Entity* object representing the created entity and populate its fields with data returned from the server.

See the individual methods for more detailed information.

read(*entity=None*, *attrs=None*, *ignore=None*, *params=None*)
Get information about the current entity.

1. Create a new entity of type `type(self)`.
2. Call *read_json()* and capture the response.
3. Populate the entity with the response.
4. Return the entity.

Step one is skipped if the `entity` argument is specified. Step two is skipped if the `attrs` argument is specified. Step three is modified by the `ignore` argument.

All of an entity's one-to-one and one-to-many relationships are populated with objects of the correct type. For example, if `SomeEntity.other_entity` is a one-to-one relationship, this should return `True`:

```
isinstance(
    SomeEntity(id=N).read().other_entity,
    nailgun.entity_mixins.Entity
)
```

Additionally, both of these commands should succeed:

```
SomeEntity(id=N).read().other_entity.id
SomeEntity(id=N).read().other_entity.read().other_attr
```

In the example above, `other_entity.id` is the **only** attribute with a meaningful value. Calling `other_entity.read` populates the remaining entity attributes.

Parameters

- **entity** (nailgun.entity_mixins.Entity) – The object to be populated and returned. An object of type `type(self)` by default.

- **attrs** – A dict. Data used to populate the object's attributes. The response from *nailgun.entity_mixins.EntityReadMixin.read_json()* by default.
- **ignore** – A set of attributes which should not be read from the server. This is mainly useful for attributes like a password which are not returned.

Returns An instance of type `type(self)`.

Return type *nailgun.entity_mixins.Entity*

read_json(*params=None*)

Get information about the current entity.

Call *read_raw()*. Check the response status code, decode JSON and return the decoded JSON as a dict.

Returns A dict. The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` if the response has an HTTP 4XX or 5XX status code.

Raises `ValueError` If the response JSON can not be decoded.

read_raw(*params=None*)

Get information about the current entity.

Make an HTTP GET call to `self.path('self')`. Return the response.

Returns A `requests.response` object.

class nailgun.entity_mixins.**EntitySearchMixin**

This mixin provides the ability to search for entities.

The methods provided by this class work together. The call tree looks like this:

```
search
├── search_json
│   └── search_raw
│       └── search_payload
├── search_normalize
└── search_filter
```

In short, here is what the methods do:

search_payload() Assemble a search query that can be encoded and sent to the server.

search_raw() Make an HTTP GET request to the server, including the payload.

search_json() Check the server's response for errors and decode the response.

search_normalize() Normalize search results so they can be used to create new entities.

search() Create one or more *nailgun.entity_mixins.Entity* objects representing the found entities and populate their fields.

search_filter() Read all `entities` and locally filter them.

See the individual methods for more detailed information.

search(*fields=None*, *query=None*, *filters=None*)

Search for entities.

At its simplest, this method searches for all entities of a given kind. For example, to ask for all *nailgun.entities.LifecycleEnvironment* entities:

```
LifecycleEnvironment().search()
```

Values on an entity are used to generate a search query, and the `fields` argument can be used to specify which fields should be used when generating a search query:

```
lc_env = LifecycleEnvironment(name='foo', organization=1)
results = lc_env.search()  # Search by name and organization.
results = lc_env.search({'name', 'organization'})  # Same.
results = lc_env.search({'name'})  # Search by name.
results = lc_env.search({'organization'})  # Search by organization
results = lc_env.search(set())  # Search for all lifecycle envs.
results = lc_env.search({'library'})  # Error!
```

In some cases, the simple search queries that can be generated by NailGun are not sufficient. In this case, you can pass in a raw search query instead. For example, to search for all lifecycle environments with a name of 'foo':

```
LifecycleEnvironment().search(query={'search': 'name="foo"'})
```

The example above is rather pointless: it is easier and more concise to use a generated query. But — and this is a **very** important "but" — the manual search query is melded in to the generated query. This can be used to great effect:

```
LifecycleEnvironment(name='foo').search(query={'per_page': 50})
```

For examples of what the final search queries look like, see *`search_payload()`*. (That method also accepts the `fields` and `query` arguments.)

In some cases, the server's search facilities may be insufficient, or it may be inordinately difficult to craft a search query. In this case, you can filter search results locally. For example, to ask the server for a list of all lifecycle environments and then locally search through the results for the lifecycle environment named "foo":

```
LifecycleEnvironment().search(filters={'name': 'foo'})
```

Be warned that filtering locally can be **very** slow. NailGun must `read()` every single entity returned by the server before filtering results. This is because the values used in the filtering process may not have been returned by the server in the initial response to the search.

The fact that all entities are read when `filters` is specified can be used to great effect. For example, this search returns a fully populated list of every single lifecycle environment:

```
LifecycleEnvironment().search(filters={})
```

Parameters

- **`fields`** – A set naming which fields should be used when generating a search query. If `None`, all values on the entity are used. If an empty set, no values are used.
- **`query`** – A dict containing a raw search query. This is melded in to the generated search query like so: `{generated: query}.update({manual: query})`.
- **`filters`** – A dict. Used to filter search results locally.

Returns A list of entities, all of type `type(self)`.

static search_filter(*entities*, *filters*)
Read all `entities` and locally filter them.

This method can be used like so:

```
entities = EntitySearchMixin(entities, {'name': 'foo'})
```

In this example, only entities where `entity.name == 'foo'` holds true are returned. An arbitrary number of field names and values may be provided as filters.

Note: This method calls *EntityReadMixin.read()*. As a result, this method only works when called on a class that also inherits from *EntityReadMixin*.

Parameters

- **entities** – A list of *Entity* objects. All list items should be of the same type.
- **filters** – A dict in the form `{field_name: field_value, ...}`.

Raises ***nailgun.entity_mixins.NoSuchFieldError*** – If any of the fields named in `filters` do not exist on the entities being filtered.

Raises `NotImplementedError` If any of the fields named in `filters` are a *nailgun.entity_fields.OneToOneField* or *nailgun.entity_fields.OneToManyField*.

search_json(*fields=None*, *query=None*)
Search for entities.

Call *search_raw()*. Check the response status code, decode JSON and return the decoded JSON as a dict.

Warning: Subclasses that override this method should not alter the `fields` or `query` arguments. (However, subclasses that override this method may still alter the server's response.) See *search_normalize()* for details.

Parameters

- **fields** – See *search()*.
- **query** – See *search()*.

Returns A dict. The server's response, with all JSON decoded.

Raises `requests.exceptions.HTTPError` if the response has an HTTP 4XX or 5XX status code.

Raises `ValueError` If the response JSON can not be decoded.

search_normalize(*results*)
Normalize search results so they can be used to create new entities.

See *search()* for an example of how to use this method. Here's a simplified example:

```
results = self.search_json()
results = self.search_normalize(results)
entity = SomeEntity(some_cfg, **results[0])
```

At this time, it is possible to parse all search results without knowing what search query was sent to the server. However, it is possible that certain responses can only be parsed if the search query is known. If that is the case, this method will be given a new `payload` argument, where `payload` is the query sent to the server.

As a precaution, the following is higly recommended:

- *`search()`* may alter `fields` and `query` at will.
- *`search_payload()`* may alter `fields` and `query` in an idempotent manner.
- No other method should alter `fields` or `query`.

Parameters **`results`** – A list of dicts, where each dict is a set of attributes for one entity. The contents of these dicts are as is returned from the server.

Returns A list of dicts, where each dict is a set of attributes for one entity. The contents of these dicts have been normalized and can be used to instantiate entities.

`search_payload`(*fields=None*, *query=None*)

Create a search query.

Do the following:

1. Generate a search query. By default, all values returned by *`nailgun.entity_mixins.Entity.get_values()`* are used. If `fields` is specified, only the named values are used.
2. Merge `query` in to the generated search query.
3. Return the result.

The rules for generating a search query can be illustrated by example. Let's say that we have an entity with an *`nailgun.entity_fields.IntegerField`*, a *`nailgun.entity_fields.OneToOneField`* and a *`nailgun.entity_fields.OneToManyField`*:

```
>>> some_entity = SomeEntity(id=1, one=2, many=[3, 4])
>>> fields = some_entity.get_fields()
>>> isinstance(fields['id'], IntegerField)
True
>>> isinstance(fields['one'], OneToOneField)
True
>>> isinstance(fields['many'], OneToManyField)
True
```

This method appends "_id" and "_ids" on to the names of each `OneToOneField` and `OneToManyField`, respectively:

```
>>> some_entity.search_payload()
{'id': 1, 'one_id': 2, 'many_ids': [3, 4]}
```

By default, all fields are used. But you can specify a set of field names to use:

```
>>> some_entity.search_payload({'id'})
{'id': 1}
>>> some_entity.search_payload({'one'})
{'one_id': 2}
>>> some_entity.search_payload({'id', 'one'})
{'id': 1, 'one_id': 2}
```

If a `query` is specified, it is merged in to the generated query:

```
>>> some_entity.search_payload(query={'id': 5})
{'id': 5, 'one_id': 2, 'many_ids': [3, 4]}
>>> some_entity.search_payload(query={'per_page': 1000})
{'id': 1, 'one_id': 2, 'many_ids': [3, 4], 'per_page': 1000}
```

Warning: This method currently generates an extremely naive search query that will be wrong in many cases. In addition, Satellite currently accepts invalid search queries without complaint. Make sure to check the API documentation for your version of Satellite against what this method produces.

Parameters

- **fields** – See *search()*.
- **query** – See *search()*.

Returns A dict that can be encoded as JSON and used in a search.

search_raw(*fields=None*, *query=None*)
Search for entities.

Make an HTTP GET call to `self.path('base')`. Return the response.

Warning: Subclasses that override this method should not alter the `fields` or `query` arguments. (However, subclasses that override this method may still alter the server's response.) See *search_normalize()* for details.

Parameters

- **fields** – See *search()*.
- **query** – See *search()*.

Returns A `requests.response` object.

class nailgun.entity_mixins.**EntityUpdateMixin**
This mixin provides the ability to update an entity.

The methods provided by this class work together. The call tree looks like this:

```
update → update_json → update_raw → update_payload
```

In short, here is what the methods do:

update_payload() Assemble a payload of data that can be encoded and sent to the server.

update_raw() Make an HTTP PUT request to the server, including the payload.

update_json() Check the server's response for errors and decode the response.

update() Create a *nailgun.entity_mixins.Entity* object representing the created entity and populate its fields.

See the individual methods for more detailed information.

update(*fields=None*)
Update the current entity.

Call *update_json()*, use the response to populate a new object of type `type(self)` and return that object.

This method requires that *nailgun.entity_mixins.EntityReadMixin.read()* or some other identical method be available on the current object. A more thorough explanation is available at *nailgun.entity_mixins.EntityCreateMixin.create()*.

Parameters **fields** – An iterable of field names. Only the fields named in this iterable will be updated. No fields are updated if an empty iterable is passed in. All fields are updated if `None` is passed in.

Raises `KeyError` if asked to update a field but no value is available for that field on the current entity.

update_json(*fields=None*)

Update the current entity.

Call *update_raw()*. Check the response status code, decode JSON and return the decoded JSON as a dict.

Parameters **fields** – See *update()*.

Returns A dict consisting of the decoded JSON in the server's response.

Raises `requests.exceptions.HTTPError` if the response has an HTTP 4XX or 5XX status code.

Raises `ValueError` If the response JSON can not be decoded.

update_payload(*fields=None*)

Create a payload of values that can be sent to the server.

By default, this method behaves just like *_payload()*. However, one can also specify a certain set of fields that should be returned. For more information, see *update()*.

update_raw(*fields=None*)

Update the current entity.

Make an HTTP PUT call to `self.path('base')`. The request payload consists of whatever is returned by *update_payload()*. Return the response.

Parameters **fields** – See *update()*.

Returns A `requests.response` object.

exception nailgun.entity_mixins.**MissingValueError**

Indicates that no value can be found for a field.

exception nailgun.entity_mixins.**NoSuchFieldError**

Indicates that the referenced field does not exist.

exception nailgun.entity_mixins.**NoSuchPathError**

Indicates that the requested path cannot be constructed.

nailgun.entity_mixins.**TASK_POLL_RATE = 5**

Default for `poll_rate` argument to *nailgun.entity_mixins._poll_task()*.

nailgun.entity_mixins.**TASK_TIMEOUT = 300**

Default for `timeout` argument to *nailgun.entity_mixins._poll_task()*.

exception nailgun.entity_mixins.**TaskFailedError**

Indicates that a task finished with a result other than "success".

exception nailgun.entity_mixins.**TaskTimedOutError**

Indicates that a task did not finish before the timout limit.

nailgun.entity_mixins.**_get_entity_id**(*field_name*, *attrs*)
Find the ID for a one to one relationship.

The server may return JSON data in the following forms for a *nailgun.entity_fields.OneToOneField*:

```
'user': None
'user': {'name': 'Alice Hayes', 'login': 'ahayes', 'id': 1}
'user_id': 1
'user_id': None
```

Search `attrs` for a one to one `field_name` and return its ID.

Parameters

- **field_name** – A string. The name of a field.
- **attrs** – A dict. A JSON payload as returned from a server.

Returns Either an entity ID or None.

nailgun.entity_mixins.**_get_entity_ids**(*field_name*, *attrs*)
Find the IDs for a one to many relationship.

The server may return JSON data in the following forms for a *nailgun.entity_fields.OneToManyField*:

```
'user': [{'id': 1, ...}, {'id': 42, ...}]
'users': [{'id': 1, ...}, {'id': 42, ...}]
'user_ids': [1, 42]
```

Search `attrs` for a one to many `field_name` and return its ID.

Parameters

- **field_name** – A string. The name of a field.
- **attrs** – A dict. A JSON payload as returned from a server.

Returns An iterable of entity IDs.

nailgun.entity_mixins.**_get_server_config**()
Search for a *nailgun.config.ServerConfig*.

Returns *nailgun.entity_mixins.DEFAULT_SERVER_CONFIG* if it is not `None`, or whatever is returned by *nailgun.config.ServerConfig.get()* otherwise.

Return type *nailgun.config.ServerConfig*

nailgun.entity_mixins.**_make_entities_from_ids**(*entity_cls*, *entity_objs_and_ids*, *server_config*)
Given an iterable of entities and/or IDs, return a list of entities.

Parameters

- **entity_cls** – An *Entity* subclass.
- **entity_obj_or_id** – An iterable of *nailgun.entity_mixins.Entity* objects and/or entity IDs. All of the entities in this iterable should be of type `entity_cls`.

Returns A list of `entity_cls` objects.

nailgun.entity_mixins.**_make_entity_from_id**(*entity_cls*, *entity_obj_or_id*, *server_config*)
Given an entity object or an ID, return an entity object.

If the value passed in is an object that is a subclass of *Entity*, return that value. Otherwise, create an object of the type that `field` references, give that object an ID of `field_value`, and return that object.

Parameters

- **entity_cls** – An *Entity* subclass.
- **entity_obj_or_id** – Either a *nailgun.entity_mixins.Entity* object or an entity ID.

Returns An `entity_cls` object.

Return type *nailgun.entity_mixins.Entity*

`nailgun.entity_mixins.`**_payload**(*fields*, *values*)

Implement the `*_payload` methods.

It's frequently useful to create a dict of values that can be encoded to JSON and sent to the server. Unfortunately, there are mismatches between the field names used by NailGun and the field names the server expects. This method provides a default translation that works in many cases. For example:

```
>>> from nailgun.entities import Product
>>> product = Product(name='foo', organization=1)
>>> set(product.get_fields())
{
    'description',
    'gpg_key',
    'id',
    'label',
    'name',
    'organization',
    'sync_plan',
}
>>> set(product.get_values())
{'name', 'organization'}
>>> product.create_payload()
{'organization_id': 1, 'name': 'foo'}
```

Parameters

- **fields** – A value like what is returned by *nailgun.entity_mixins.Entity.get_fields()*.
- **values** – A value like what is returned by *nailgun.entity_mixins.Entity.get_values()*.

Returns A dict mapping field names to field values.

`nailgun.entity_mixins.`**_poll_task**(*task_id*, *server_config*, *poll_rate=None*, *timeout=None*)

Implement *nailgun.entities.ForemanTask.poll()*.

See *nailgun.entities.ForemanTask.poll()* for a full description of how this method acts. Other methods may also call this method, such as *nailgun.entity_mixins.EntityDeleteMixin.delete()*.

Certain mixins benefit from being able to poll the server after performing an operation. However, this module cannot use *nailgun.entities.ForemanTask.poll()*, as that would be a circular import. Placing the implementation of *nailgun.entities.ForemanTask.poll()* here allows both that method and the mixins in this module to use the same logic.

nailgun.entity_mixins.**to_json_serializable**(*obj*)
Transforms obj into a json serializable object.

Parameters **obj** – entity or any json serializable object

Returns serializable object

2.1.3 nailgun.entity_fields

The basic components of the NailGun ORM.

Each of the fields in this module corresponds to some type of information that Satellite tracks. When paired the classes in *nailgun.entity_mixins*, it is possible to represent the entities that Satellite manages. For a concrete example of how this works, see *nailgun.entity_mixins.Entity*.

Fields are typically used declaratively in an entity's `__init__` function and are otherwise left untouched, except by the mixin methods. For example, *nailgun.entity_mixins.EntityReadMixin.read()* looks at the fields on an entity to determine what information it should expect the server to return.

A secondary use of fields is to generate random data. For example, you could call `User.get_fields()['login'].gen_value()` to generate a random login. (`gen_value` is implemented at *StringField.gen_value()*) Beware that the `gen_value` methods strive to produce the most outrageous values that are still legal, so they will often return nonsense UTF-8 values, which is unpleasant to work with manually.

class nailgun.entity_fields.**BooleanField**(*required=False*, *choices=None*, *default=<object object>*, *unique=False*)
Field that represents a boolean

gen_value()
Return a value suitable for a *BooleanField*.

class nailgun.entity_fields.**DateField**(*min_date=None*, *max_date=None*, **args*, ***kwargs*)
Field that represents a date

gen_value()
Return a value suitable for a *DateField*.

class nailgun.entity_fields.**DateTimeField**(*min_date=None*, *max_date=None*, **args*, ***kwargs*)
Field that represents a datetime

gen_value()
Return a value suitable for a *DateTimeField*.

class nailgun.entity_fields.**DictField**(*required=False*, *choices=None*, *default=<object object>*, *unique=False*)
Field that represents a set of key-value pairs.

gen_value()
Return a value suitable for a *DictField*.

class nailgun.entity_fields.**EmailField**(*required=False*, *choices=None*, *default=<object object>*, *unique=False*)
Field that represents an email

gen_value()
Return a value suitable for a *EmailField*.

class nailgun.entity_fields.**Field**(*required=False*, *choices=None*, *default=<object object>*, *unique=False*)
Base class to implement other fields

Record this field's attributes.

Parameters

- **required** – A boolean. Determines whether a value must be submitted to the server when creating or updating an entity.
- **choices** – A tuple of values that this field may be populated with.
- **default** – Entity classes that inherit from *nailgun.entity_mixins.EntityCreateMixin* use this field.

class nailgun.entity_fields.**FloatField**(*required=False*, *choices=None*, *default=<object object>*, *unique=False*)

Field that represents a float

gen_value()

Return a value suitable for a *FloatField*.

class nailgun.entity_fields.**IPAddressField**(*length=(1, 30)*, *str_type=('utf8',)*, **args*, ***kwargs*)

Field that represents an IP adrress

gen_value()

Return a value suitable for a *IPAddressField*.

class nailgun.entity_fields.**IntegerField**(*min_val=None*, *max_val=None*, **args*, ***kwargs*)

Field that represents an integer.

gen_value()

Return a value suitable for a *IntegerField*.

class nailgun.entity_fields.**ListField**(*required=False*, *choices=None*, *default=<object object>*, *unique=False*)

Field that represents a list of strings

class nailgun.entity_fields.**MACAddressField**(*length=(1, 30)*, *str_type=('utf8',)*, **args*, ***kwargs*)

Field that represents a MAC adrress

gen_value()

Return a value suitable for a *MACAddressField*.

class nailgun.entity_fields.**NetmaskField**(*length=(1, 30)*, *str_type=('utf8',)*, **args*, ***kwargs*)

Field that represents an netmask

gen_value()

Return a value suitable for a *NetmaskField*.

class nailgun.entity_fields.**OneToManyField**(*entity*, **args*, ***kwargs*)

Field that represents a reference to zero or more other entities.

Parameters **entity** (nailgun.entity_mixins.Entity) – The entities to which this field points.

gen_value()

Return the class that this field references.

class nailgun.entity_fields.**OneToOneField**(*entity*, **args*, ***kwargs*)

Field that represents a reference to another entity.

All parameters not documented here are passed to *Field*.

Parameters **entity** (nailgun.entity_mixins.Entity) – The entity to which this field points.

gen_value()
Return the class that this field references.

class nailgun.entity_fields.**StringField**(*length=(1, 30), str_type=('utf8',), *args, **kwargs*)
Field that represents a string.

The default `length` of string fields is short for two reasons:

1. Foreman's database backend limits many fields to 255 bytes in length. As a result, `length` should be no longer than 85 characters long, as 85 unicode characters may be up to 255 bytes long.
2. Humans have to read through the error messages produced by this library. Long error messages are hard to read through, and that hurts productivity. Thus, a `length` even shorter than 85 chars is desirable.

Parameters

- **length** – Either a `(min_len, max_len)` tuple or an `exact_len` integer.
- **str_type** – The types of characters to generate when *StringField.gen_value()* is called. May be a single string type (e.g. `'utf8'`) or a tuple of string types. This argument is passed through to FauxFactory's `gen_string` method, so this method accepts all string types which that method does.

gen_value()
Return a value suitable for a *StringField*.

class nailgun.entity_fields.**URLField**(*length=(1, 30), str_type=('utf8',), *args, **kwargs*)
Field that represents an URL

gen_value()
Return a value suitable for a *URLField*.

2.1.4 nailgun.config

Tools for managing and presenting server connection configurations.

NailGun needs to know certain facts about the remote server in order to do anything useful. For example, NailGun needs to know the URL of the remote server (e.g. 'https://example.com:250') and how to authenticate with the remote server. *nailgun.config.ServerConfig* eases the task of managing and presenting that information.

class nailgun.config.**BaseServerConfig**(*url*, *auth=None*, *version=None*)
A set of facts for communicating with a Satellite server.

This object stores a set of facts that can be used when communicating with a Satellite server, regardless of whether that communication takes place via the API, CLI or UI. *nailgun.config.ServerConfig* is more specialized and adds attributes that are useful when communicating with the API.

Parameters

- **url** – A string. The URL of a server. For example: *'https://example.com:250'*.
- **auth** – Credentials to use when communicating with the server. For example: *('username', 'password')*. No instance attribute is created if no value is provided.
- **version** – A string, such as `'6.0'` or `'6.1'`, indicating the Satellite version the server is running. This version number is parsed by `packaging.version.parse` before being stored locally. This allows for version comparisons:

```
>>> from nailgun.config import ServerConfig
>>> from packaging.version import parse
>>> cfg = ServerConfig('http://sat.example.com', version='6.0')
>>> cfg.version == parse('6.0')
True
>>> cfg.version == parse('6.0.0')
True
>>> cfg.version < parse('10.0')
True
>>> '6.0' < '10.0'
False
```

If no version number is provided, then no instance attribute is created, and it is assumed that the server is running an up-to-date nightly build.

Warning: This class will likely be moved to a separate Python package in a future release of NailGun. Be careful about making references to this class, as those references will likely need to be changed.

classmethod delete(*label='default'*, *path=None*)
Delete a server configuration.

This method is thread safe.

Parameters

- **label** – A string. The configuration identified by `label` is deleted.
- **path** – A string. The configuration file to be manipulated. Defaults to what is returned by *nailgun.config._get_config_file_path()*.

Returns `None`

classmethod get(*label='default'*, *path=None*)
Read a server configuration from a configuration file.

Parameters

- **label** – A string. The configuration identified by `label` is read.
- **path** – A string. The configuration file to be manipulated. Defaults to what is returned by *nailgun.config._get_config_file_path()*.

Returns A brand new *nailgun.config.BaseServerConfig* object whose attributes have been populated as appropriate.

Return type *BaseServerConfig*

classmethod get_labels(*path=None*)
Get all server configuration labels.

Parameters **path** – A string. The configuration file to be manipulated. Defaults to what is returned by *nailgun.config._get_config_file_path()*.

Returns Server configuration labels, where each label is a string.

save(*label='default'*, *path=None*)
Save the current connection configuration to a file.

This method is thread safe.

Parameters

- **label** – A string. An identifier for the current configuration. This allows multiple configurations with unique labels to be saved in a single file. If a configuration identified by `label` already exists in the destination configuration file, it is replaced.
- **path** – A string. The configuration file to be manipulated. By default, an XDG-compliant configuration file is used. A configuration file is created if one does not exist already.

Returns `None`

exception `nailgun.config.`**ConfigFileError**
Indicates an error occurred when locating a configuration file.

> **Warning:** This class will likely be moved to a separate Python package in a future release of NailGun. Be careful about making references to this class, as those references will likely need to be changed.

class `nailgun.config.`**ServerConfig**(*url*, *auth=None*, *version=None*, *verify=None*)
Extend *nailgun.config.BaseServerConfig*.

This class adds functionality that is useful specifically when working with the API. For example, it stores the additional `verify` instance attribute and adds logic useful for presenting information to the methods in *nailgun.client*.

Parameters **verify** – A boolean. Should SSL be verified when communicating with the server? No instance attribute is created if no value is provided.

classmethod get(*label='default'*, *path=None*)
Read a server configuration from a configuration file.

This method extends *nailgun.config.BaseServerConfig.get()*. Please read up on that method before trying to understand this one.

The entity classes rely on the requests library to be a transport mechanism. The methods provided by that library, such as `get` and `post`, accept an `auth` argument. That argument must be a tuple:

> Auth tuple to enable Basic/Digest/Custom HTTP Auth.

However, the JSON decoder does not recognize a tuple as a type, and represents sequences of elements as a tuple. Compensate for that by converting `auth` to a two element tuple if it is a two element list.

This override is done here, and not in the base class, because the base class may be extracted out into a separate library and used in other contexts. In those contexts, the presence of a list may not matter or may be desirable.

get_client_kwargs()
Get kwargs for use with the methods in *nailgun.client*.

This method returns a dict of attributes that can be unpacked and used as kwargs via the `**` operator. For example:

```
cfg = ServerConfig.get()
client.get(cfg.url + '/api/v2', **cfg.get_client_kwargs())
```

This method is useful because client code may not know which attributes should be passed from a `ServerConfig` object to one of the `nailgun.client` functions. Consider that the example above could also be written like this:

```
cfg = ServerConfig.get()
client.get(cfg.url + '/api/v2', auth=cfg.auth, verify=cfg.verify)
```

But this latter approach is more fragile. It will break if `cfg` does not have an `auth` or `verify` attribute.

`nailgun.config._get_config_file_path`(*xdg_config_dir*, *xdg_config_file*)
Search `XDG_CONFIG_DIRS` for a config file and return the first found.

Search each of the standard XDG configuration directories for a configuration file. Return as soon as a configuration file is found. Beware that by the time client code attempts to open the file, it may be gone or otherwise inaccessible.

Parameters

- **xdg_config_dir** – A string. The name of the directory that is suffixed to the end of each of the `XDG_CONFIG_DIRS` paths.
- **xdg_config_file** – A string. The name of the configuration file that is being searched for.

Returns A `str` path to a configuration file.

Raises ***nailgun.config.ConfigFileError*** – When no configuration file can be found.

2.1.5 nailgun.client

Wrappers for methods in the Requests module.

The functions in this module wrap functions from the Requests module. Each function is modified with the following behaviours:

1. It sets the 'content-type' header to 'application/json', so long as no content-type is already set.
2. It encodes its `data` argument as JSON (using the `json` module) if the 'content-type' header is 'application/json'.
3. It logs information about the request before it is sent.
4. It logs information about the response when it is received.

`nailgun.client.delete`(*url*, ***kwargs*)
A wrapper for `requests.delete`. Sends a DELETE request.

`nailgun.client.get`(*url*, *params=None*, ***kwargs*)
A wrapper for `requests.get`.

`nailgun.client.head`(*url*, ***kwargs*)
A wrapper for `requests.head`.

`nailgun.client.patch`(*url*, *data=None*, ***kwargs*)
A wrapper for `requests.patch`. Sends a PATCH request.

`nailgun.client.post`(*url*, *data=None*, *json=None*, ***kwargs*)
A wrapper for `requests.post`.

`nailgun.client.put`(*url*, *data=None*, ***kwargs*)
A wrapper for `requests.put`. Sends a PUT request.

`nailgun.client.request`(*method*, *url*, ***kwargs*)
A wrapper for `requests.request`.

2.2 tests

Unit tests for NailGun.

2.2.1 tests.test_client

Unit tests for *nailgun.client*.

class tests.test_client.**ClientTestCase**(*methodName='runTest'*)
Tests for functions in *nailgun.client*.

setUp()
Hook method for setting up the test fixture before exercising it.

test_client_request()
Test *nailgun.client.request()*.

Make the same assertions as *tests.test_client.ClientTestCase.test_clients()*.

test_clients()
Test all the wrappers except *nailgun.client.request()*.

The following functions are tested:

- *nailgun.client.delete()*
- *nailgun.client.get()*
- *nailgun.client.head()*
- *nailgun.client.patch()*
- *nailgun.client.post()*
- *nailgun.client.put()*

Assert that:

- The wrapper function passes the correct parameters to requests.
- The wrapper function returns whatever requests returns.

test_identical_args()
Check that the wrapper functions have the correct signatures.

For example, *nailgun.client.delete()* should have the same signature as `requests.delete`.

class tests.test_client.**ContentTypeIsJsonTestCase**(*methodName='runTest'*)
Tests for function `_content_type_is_json`.

test_false()
Assert `True` is returned when content-type is not JSON.

test_false_with_no_headers()
If no headers passed should return None

test_true()
Assert `True` is returned when content-type is JSON.

class tests.test_client.**SetContentTypeTestCase**(*methodName='runTest'*)
Tests for function `_set_content_type`.

test_existing_value()
Assert that no content-type is provided if one is set.

test_files_in_kwargs()
Assert that no content-type is provided if files are given.

test_no_value()
Assert that a content-type is provided if none is set.

2.2.2 tests.test_config

Unit tests for *nailgun.config*.

class tests.test_config.**BaseServerConfigTestCase**(*methodName='runTest'*)
Tests for *nailgun.config.BaseServerConfig*.

test_delete()
Test *nailgun.config.BaseServerConfig.delete()*.

Assert that the method reads the config file before writing, and that it writes out a correct config file.

test_get()
Test *nailgun.config.BaseServerConfig.get()*.

Assert that the method extracts the asked-for section from a configuration file and correctly populates a new `BaseServerConfig` object. Also assert that the `auth` attribute is a list. (See the docstring for *nailgun.config.ServerConfig.get()*.)

test_get_labels()
Test *nailgun.config.BaseServerConfig.get_labels()*.

Assert that the method returns the correct labels.

test_init()
Test instantiating *nailgun.config.BaseServerConfig*.

Assert that only provided values become object attributes.

test_save()
Test *nailgun.config.BaseServerConfig.save()*.

Assert that the method reads the config file before writing, and that it writes out a correct config file.

class tests.test_config.**ReprTestCase**(*methodName='runTest'*)
Test method `nailgun.config.BaseServerConfig.__repr__`.

test_bsc_v1()
Test *nailgun.config.BaseServerConfig*.

Assert that `__repr__` works correctly when `url` is specified.

test_bsc_v2()
Test *nailgun.config.BaseServerConfig*.

Assert that `__repr__` works correctly when `url` and `auth` are specified.

test_bsc_v3()
Test *nailgun.config.BaseServerConfig*.

Assert that `__repr__` works correctly when `url` and `version` are specified.

test_sc_v1()
Test *nailgun.config.ServerConfig*.

Assert that `__repr__` works correctly when only a URL is passed in.

test_sc_v2()
Test *nailgun.config.ServerConfig*.

Assert that `__repr__` works correctly when `url` and `auth` are specified.

test_sc_v3()
Test *nailgun.config.ServerConfig*.

Assert that __repr__ works correctly when `url` and `version` are specified.

test_sc_v4()
Test *nailgun.config.ServerConfig*.

Assert that __repr__ works correctly when `url` and `verify` are specified.

class tests.test_config.**ServerConfigTestCase**(*methodName='runTest'*)
Tests for *nailgun.config.ServerConfig*.

test_get()
Test *nailgun.config.ServerConfig.get()*.

Assert that the `auth` attribute is a tuple.

test_get_client_kwargs()
Test *nailgun.config.ServerConfig.get_client_kwargs()*.

Assert that:

- `get_client_kwargs` returns all of the instance attributes from its object except the "url" attribute, and
- no instance attributes from the object are removed.

test_init()
Test instantiating *nailgun.config.ServerConfig*.

Assert that only provided values become object attributes.

test_raise_config_file_error()
Should raise error if path not found

2.2.3 tests.test_entities

Tests for *nailgun.entities*.

class tests.test_entities.**AbstractDockerContainerTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.AbstractDockerContainer*.

setUp()
Set a server configuration at `self.cfg`.

test_get_fields()
Call `nailgun.entity_mixins.Entity.get_fields`.

Assert that `nailgun.entities.DockerHubContainer.get_fields` and `nailgun.entities.DockerRegistryContainer.get_fields` return a dictionary of attributes that match what is returned by `nailgun.entities.AbstractDockerContainer.get_fields` but also returns extra attributes unique to them.

class tests.test_entities.**ConfigTemplateTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.ConfigTemplate*.

test_creation_and_update()
Check template combinations as json or entity is set on correct attribute template_combinations_attributes (check #333)

class tests.test_entities.**ContentUploadTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.ContentUpload*.

setUp()
Set `self.repo`.

test_content_upload_create()
Test `nailgun.entities.ContentUpload.create`.

Make the (mock) server return a "success" status. Make the same assertions as for *tests.test_entities.GenericTestCase.test_generic()*.

test_content_upload_delete()
Test `nailgun.entities.ContentUpload.delete`.

Make the (mock) server return a "success" status. Make the same assertions as for *tests.test_entities.GenericTestCase.test_generic()*.

test_content_upload_no_filename()
Test `nailgun.entities.ContentUpload.upload` without a filename.

Make the (mock) server return a "success" status. Make the same assertions as for *tests.test_entities.GenericTestCase.test_generic()*.

test_content_upload_update()
Test `nailgun.entities.ContentUpload.update`.

Make the (mock) server return a "success" status. Make the same assertions as for *tests.test_entities.GenericTestCase.test_generic()*.

test_content_upload_upload()
Test `nailgun.entities.ContentUpload.upload`.

Make the (mock) server return a "success" status. Make the same assertions as for *tests.test_entities.GenericTestCase.test_generic()*.

class tests.test_entities.**ContentViewComponentTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.ContentViewComponent*.

setUp()
Set a server configuration at `self.cfg`.

test_add()
Check that helper method is sane.

Assert that:

- Method has a correct signature.
- Method calls *client.** once.
- Method calls *entities._handle_response* once.

test_remove()
Check that helper method is sane.

Assert that:

- Method has a correct signature.
- Method calls *client.** once.
- Method calls *entities._handle_response* once.

class tests.test_entities.**ContentViewTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.ContentView*.

setUp()
Hook method for setting up the test fixture before exercising it.

test_read()
Check that helper method is sane.

test_search()
Check that helper method is sane.

class tests.test_entities.**CreateMissingTestCase**(*methodName='runTest'*)
Tests for extensions of `create_missing`.

classmethod setUpClass()
Set a server configuration at `cls.cfg`.

test_auth_source_ldap_v1()
Test `AuthSourceLDAP(onthefly_register=False).create_missing()`

test_auth_source_ldap_v2()
Test `AuthSourceLDAP(onthefly_register=True).create_missing()`.

test_auth_source_ldap_v3()
Does `AuthSourceLDAP.create_missing` overwrite fields?

test_config_template_v1()
Test `ConfigTemplate(snippet=True)`.

test_config_template_v2()
Test `ConfigTemplate(snippet=False)`.

test_config_template_v3()
Test `ConfigTemplate(snippet=False, template_kind=...)`.

test_domain_v1()
Test `Domain(name='UPPER')`.

test_domain_v2()
Test `Domain()`.

test_external_usergroup()
Test `ExternalUserGroup()`

test_host_v1()
Test `Host()`.

test_host_v2()
Test `Host()` with providing all the optional entities unlinked

test_host_v3()
Test `Host()` providing optional entities with id only. Check that additional read was called for that entities.

test_lifecycle_environment_v1()
Test `LifecycleEnvironment(name='Library')`.

test_lifecycle_environment_v2()
Test `LifecycleEnvironment(name='not Library')`.

test_lifecycle_environment_v3()
What happens when the "Library" lifecycle env cannot be found?

test_provisioning_template_v1()
Test `ProvisioningTemplate(snippet=True)`.

test_provisioning_template_v2()
Test `ProvisioningTemplate(snippet=False)`.

test_provisioning_template_v3()
Test `ProvisioningTemplate(snippet=False, template_kind=...)`.

test_repository_v1()
Test `Repository(content_type='docker')`.

test_repository_v2()
Test `Repository(content_type='not docker')`.

class tests.test_entities.**CreatePayloadTestCase**(*methodName='runTest'*)
Tests for extensions of `create_payload`.

Several classes extend the `create_payload` method and make it do things like rename attributes or wrap the submitted dict of data in a second hash. It is possible to mess this up in a variety of ways. For example, an extended method could try to rename an attribute that does not exist. This class attempts to find such issues by creating an entity, calling *nailgun.entity_mixins.EntityCreateMixin.create_payload()* and asserting that a `dict` is returned.

classmethod setUpClass()
Set a server configuration at `cls.cfg`.

test_content_view_filter_rule()
Create a *nailgun.entities.ContentViewFilterRule*.

test_discovery_rule()
Create a *nailgun.entities.DiscoveryRule*.

test_external_usergroup_payload()
Call `create_payload` on a *nailgun.entities.ExternalUserGroup*.

test_host_collection()
Create a *nailgun.entities.HostCollection*.

test_image()
Create a *nailgun.entities.Image*.

test_job_template()
Create a *nailgun.entities.JobTemplate*.

test_media()
Create a *nailgun.entities.Media*.

test_no_attributes()
Instantiate an entity and call `create_payload` on it.

test_override_value()
Create a *nailgun.entities.OverrideValue*.

test_subnet()
Create a *nailgun.entities.Subnet*.

test_sync_plan()
Call `create_payload` on a *nailgun.entities.SyncPlan*.

class tests.test_entities.**CreateTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins.EntityCreateMixin.create()*.

classmethod setUpClass()
Set a server configuration at `cls.cfg`.

test_generic()
Call `create` on a variety of entities.

class tests.test_entities.**FileTestCase**(*methodName='runTest'*)
Class with entity File tests

test_to_json()
Check json serialisation on nested entities

class tests.test_entities.**ForemanStatusTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.ForemanStatus*.

setUp()
Set a server configuration at `self.cfg`.

test_read()
Ensure `read` and `read_json` are called once.

class tests.test_entities.**ForemanTaskTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.ForemanTask*.

setUp()
Set `self.foreman_task`.

test_poll()
Call *nailgun.entities.ForemanTask.poll()*.

class tests.test_entities.**GenericTestCase**(*methodName='runTest'*)
Generic tests for the helper methods on entities.

classmethod setUpClass()
Create test data as `cls.methods_requests`.

`methods_requests` is a tuple of two-tuples, like so:

```
(
    entity_obj1.method, 'post',
    entity_obj2.method, 'post',
    entity_obj3.method1, 'get',
    entity_obj3.method2, 'put',
)
```

test_generic()
Check that a variety of helper methods are sane.

Assert that:

- Each method has a correct signature.
- Each method calls *client.** once.
- Each method passes the right arguments to *client.**.
- Each method calls *entities._handle_response* once.
- The result of *_handle_response(...)* is the return value.

test_intelligent()
Check that intelligent methods that send additional data are sane.

Assert that:

- Each method calls *client.** once.
- Each method passes the right arguments to *client.**.
- Each method calls *entities._handle_response* once.
- The result of *_handle_response(...)* is the return value.

class tests.test_entities.**GetOrgTestCase**(*methodName='runTest'*)
Test `nailgun.entities._get_org`.

setUp()
Set `self.args`, which can be passed to `_get_org`.

test_api_response_error()
Trigger an *nailgun.entities.APIResponseError*.

test_default()
Run the method with a sane and normal set of arguments.

test_to_json()
json serialization

class tests.test_entities.**HandleResponseTestCase**(*methodName='runTest'*)
Test `nailgun.entities._handle_response`.

test_accepted_v1()
Give the response an HTTP "ACCEPTED" status code.

Call `_handle_response` twice:

- Do not pass the `synchronous` argument.
- Pass `synchronous=False`.

test_accepted_v2()
Give the response an HTTP "ACCEPTED" status code.

Pass `synchronous=True` as an argument.

test_default()
Don't give the response any special status code.

test_json_content()
Give the response JSON content type

test_no_content()
Give the response an HTTP "NO CONTENT" status code.

test_no_json_content()
Check if no JSON content type response return response.content.

class tests.test_entities.**HostGroupTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.HostGroup*.

setUp()
Hook method for setting up the test fixture before exercising it.

test_clone_hostgroup()
"Test for *nailgun.entities.HostGroup.clone()* Assert that the method is called one with correct argumets

test_delete_puppetclass()
Check that helper method is sane.

Assert that:

- Method has a correct signature.
- Method calls *client.** once.
- **Method passes the right arguments to *client.** and special** argument 'puppetclass_id' removed from data dict.

- Method calls *entities._handle_response* once.
- The result of *_handle_response(...)* is the return value.

test_read_sat61z()
Ensure `read`, `read_json` and `update_json` are called once.

This test is only appropriate for entities that override the `read` method in order to fiddle with the `attrs` argument.

test_read_sat62z()
Ensure `read` and `read_json` are called once. And `update_json` are not called.

This test is only appropriate for entities that override the `read` method in order to fiddle with the `attrs` argument.

class tests.test_entities.**HostTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.Host*.

setUp()
Set a server configuration at `self.cfg`.

test_delete_puppetclass()
Check that helper method is sane.

Assert that:

- Method has a correct signature.
- Method calls *client.** once.
- **Method passes the right arguments to *client.** and special** argument 'puppetclass_id' removed from data dict.
- Method calls *entities._handle_response* once.
- The result of *_handle_response(...)* is the return value.

test_init_with_owner()
Assert that both `id` or `entity` can be passed as a value for `owner` attribute.

test_init_with_owner_type()
Assert `owner` attribute is an entity of correct type, according to `owner_type` field value

test_no_facet_attributes()
Assert that `content_facet_attributes` attribute is ignored when `content_facet_attributes` attribute is not returned for host

test_owner_type_property()
Verify `owner_type` property works as expected.

Assert that:

- `owner_type` property reflects `_owner_type` attribute value
- `owner_type` property is included in attributes list, `_owner_type` attribute - is not

test_update_owner_type()
Ensure that in case `owner_type` value changes, `owner` changes it's type accordingly.

class tests.test_entities.**InitTestCase**(*methodName='runTest'*)
Tests for all of the `__init__` methods.

The tests in this class are a sanity check. They simply check to see if you can instantiate each entity.

classmethod setUpClass()
Set a server configuration at `cls.cfg`.

test_init_succeeds()
Instantiate every entity.

Assert that the returned object is an instance of the class that produced it.

test_required_params()
Instantiate entities that require extra parameters.

Assert that `TypeError` is raised if the required extra parameters are not provided.

class tests.test_entities.**JobInvocationTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.JobInvocation*.

classmethod setUpClass()
Hook method for setting up class fixture before running tests in the class.

test_non_sync_run()
Run job asynchronously with valid parameters and check that correct post request is sent

test_required_param()
Check required parameters

test_sync_run()
Check that sync run will result in ForemanTask poll

class tests.test_entities.**JobTemplateTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.JobTemplate*.

setUp()
Hook method for setting up the test fixture before exercising it.

tearDown()
Hook method for deconstructing the test fixture after testing it.

class tests.test_entities.**JsonSerializableTestCase**(*methodName='runTest'*)
Test regarding Json serializable on different object

test_boolean_datetime_float()
Check serialization for boolean, datetime and float fields

test_date_field()
Check date field serialization

test_entities()
Testing nested entities serialization

test_nested_entities()
Check nested entities serialization

test_regular_objects()
Checking regular objects transformation

class tests.test_entities.**ModuleStreamTestCase**(*methodName='runTest'*)
Class with entity Module Stream tests

test_to_json()
Check json serialisation on nested entities

class tests.test_entities.**PackageGroupTestCase**(*methodName='runTest'*)
Class with entity Package Group tests

test_to_json()
Check json serialisation on nested entities

class tests.test_entities.**PackageTestCase**(*methodName='runTest'*)
Class with entity Package tests

test_to_json()
Check json serialisation on nested entities

class tests.test_entities.**PathTestCase**(*methodName='runTest'*)
Tests for extensions of *nailgun.entity_mixins.Entity.path()*.

setUp()
Set `self.cfg` and `self.id_`.

test_arfreport()
Test *nailgun.entities.ArfReport.path()*. Assert that the following return appropriate paths: * `ArfReport(id=...).path()` * `ArfReport(id=...).path('download_html')`

test_capsule()
Test *nailgun.entities.Capsule.path()*.

Assert that the following return appropriate paths:

- `Capsule().path('content_lifecycle_environments')`
- `Capsule().path('content_sync')`

test_externalusergroup()
Test *nailgun.entities.ExternalUserGroup.path()*.

Assert that the following return appropriate paths:

- `ExternalUserGroup(id=...,usergroup=...).path()`
- `ExternalUserGroup(id=...,usergroup=...).path('refresh')`

test_hostsubscription()
Test *nailgun.entities.HostSubscription.path()*.

Assert that the following return appropriate paths:

- `HostSubscription(host=...).path('add_subscriptions')`
- `HostSubscription(host=...).path('remove_subscriptions')`

test_id_and_which()
Execute `entity(id=...).path(which=...)`.

test_no_such_path_error()
Trigger *nailgun.entity_mixins.NoSuchPathError* exceptions.

Do this by calling `entity().path(which=...)`.

test_noid_and_which()
Execute `entity().path(which=...)`.

test_nowhich()
Execute `entity().path()` and `entity(id=...).path()`.

test_os_default_template()
Test `nailgun.entities.OSDefaultTemplate.path`

Assert that the following return appropriate paths:

- `OSDefaultTemplate(id=...).path()`

test_repository_set()
Test *nailgun.entities.RepositorySet.path()*.

Assert that the following return appropriate paths:

- `RepositorySet(id=...).path()`
- `RepositorySet(id=...).path('available_repositories')`
- `RepositorySet(id=...).path('disable')`
- `RepositorySet(id=...).path('enable')`

test_subscription()
Test *nailgun.entities.Subscription.path()*.

Assert that the following return appropriate paths:

- `Subscription(organization=...).path('delete_manifest')`
- `Subscription(organization=...).path('manifest_history')`
- `Subscription(organization=...).path('refresh_manifest')`
- `Subscription(organization=...).path('upload')`

test_sync_plan()
Test *nailgun.entities.SyncPlan.path()*.

Assert that the following return appropriate paths:

- `SyncPlan(id=...).path()`
- `SyncPlan(id=...).path('add_products')`
- `SyncPlan(id=...).path('remove_products')`

test_system()
Test *nailgun.entities.System.path()*.

Assert that the following return appropriate paths:

- `System().path()`
- `System().path('base')`
- `System(uuid=...).path()`
- `System(uuid=...).path('self')`
- `System(uuid=...).path('subscriptions')`

class tests.test_entities.**ProvisioningTemplateTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.ProvisioningTemplate*.

test_creation_and_update()
Check template combinations as json or entity is set on correct attribute template_combinations_attributes (check #333)

class tests.test_entities.**PuppetClassTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.PuppetClass*.

setUp()
Set `self.puppet_class`.

test_search_normalize()
Call *nailgun.entities.PuppetClass.search_normalize()*. Assert that returned value is a list and contains all subdictionaries.

class tests.test_entities.**ReadTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins.EntityReadMixin.read()*.

setUp()
Set a server configuration at `self.cfg`.

test_attrs_arg_v1()
Ensure `read` and `read_json` are both called once.

This test is only appropriate for entities that override the `read` method in order to fiddle with the `attrs` argument.

test_attrs_arg_v2()
Ensure `read`, `read_json` and `client.put` are called once.

This test is only appropriate for entities that override the `read` method in order to fiddle with the `attrs` argument.

test_discovery_rule()
Call *nailgun.entities.DiscoveryRule.read()*.

Ensure that the `max_count` attribute is fetched.

test_entity_arg()
Call `read` on entities that require parameters for instantiation.

Some entities require extra parameters when being instantiated. As a result, these entities must extend *nailgun.entity_mixins.EntityReadMixin.read()* by providing a value for the `entity` argument. Assert that these entities pass their server configuration objects to the child entities that they create and pass in to the `entity` argument.

test_entity_ids()
Test cases where the server returns unusually named attributes.

Assert that the returned attributes are renamed to be more regular before calling `read()`.

test_host_with_interface()
Call *nailgun.entities.Host.read()*.

Assert that host will have interfaces initialized and assigned correctly.

test_hostgroup_ignore_root_pass()
Call *nailgun.entities.HostGroup.read()*.

Assert that the entity ignores the `root_pass` field.

test_ignore_arg_v1()
Call `read` on a variety of entities.‘‘.

Assert that the `ignore` argument is correctly passed on.

test_ignore_arg_v2()
Call *nailgun.entities.DockerComputeResource.read()*.

Assert that the entity ignores the ‘password’ field.

test_ignore_arg_v3()
Call *nailgun.entities.AuthSourceLDAP.read()*.

Assert that the entity ignores the ‘account_password’ field.

test_ignore_arg_v4()
Call *nailgun.entities.User.read()*.

Assert that entity‘s predefined values of `ignore` are always correctly passed on.

test_interface_ignore_arg()
Call *nailgun.entities.Interface.read()*.

Assert that entity's predefined values of `ignore` are always correctly passed on.

test_parameter_ignore_arg()
Call *nailgun.entities.Parameter.read()*.

Assert that entity's predefined values of `ignore` are always correctly passed on.

test_product_with_sync_plan()
Call *nailgun.entities.Product.read()* for a product with sync plan assigned.

Ensure that the sync plan entity was correctly fetched.

test_subnet()
Call *nailgun.entities.Subnet.read()*.

Ensure that the `from_` attribute is successfully set.

test_usergroup_with_external_usergroup()
Call *nailgun.entities.ExternalUserGroup.read()* for a usergroup with external usergroup assigned.

Ensure that the external usergroup entity was correctly fetched.

class tests.test_entities.**RepositorySetTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.RepositorySet*.

setUp()
Set `self.product`.

class tests.test_entities.**RepositoryTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.Repository*.

setUp()
Set `self.repo`.

test_files()
"Test for *nailgun.entities.Repository.files()* Assert that the method is called one with correct arguments

test_import_uploads_upload_ids()
Call *nailgun.entities.Repository.import_uploads()* with the *upload_ids* parameter.

Make the (mock) server return a "success" status. Make the same assertions as for *tests.test_entities.GenericTestCase.test_generic()*.

test_import_uploads_uploads()
Call *nailgun.entities.Repository.import_uploads()* with the *uploads* parameter.

Make the (mock) server return a "success" status. Make the same assertions as for *tests.test_entities.GenericTestCase.test_generic()*.

test_upload_content_v1()
Call *nailgun.entities.Repository.upload_content()*.

Make the (mock) server return a "success" status. Make the same assertions as for *tests.test_entities.GenericTestCase.test_generic()*.

test_upload_content_v2()
Call *nailgun.entities.Repository.upload_content()*.

Assert that *nailgun.entities.APIResponseError* is raised when the (mock) server fails to return a "success" status.

class tests.test_entities.**SearchNormalizeTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins.EntitySearchMixin.search_normalize()*.

classmethod setUpClass()
Set a server configuration at `cls.cfg`.

test_host_with_image()
Call *nailgun.entities.Host.read()* for a host with image assigned.

Ensure that the image entity was correctly fetched.

test_interface()
Test *nailgun.entities.Interface.search_normalize()*.

Assert that `host_id` was added with correct host's id to search results.

test_sshkey()
Test *nailgun.entities.SSHKey.search_normalize()*.

Assert that `user_id` was added with correct user's id to search results.

class tests.test_entities.**SearchPayloadTestCase**(*methodName='runTest'*)
Tests for extensions of `search_upload`.

classmethod setUpClass()
Set a server configuration at `cls.cfg`.

test_content_view_filter_rule()
errata_id field should be Errata ID when sent to the server, not DB ID.

test_generic()
Instantiate a variety of entities and call `search_payload`.

class tests.test_entities.**SearchTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins.EntitySearchMixin.search()*.

classmethod setUpClass()
Set a server configuration at `cls.cfg`.

test_host_with_image()
Call *nailgun.entities.Host.search()* for a host with image assigned.

Ensure that the image entity was correctly fetched.

test_product_with_sync_plan()
Call *nailgun.entities.Product.search()* for a product with sync plan assigned.

Ensure that the sync plan entity was correctly fetched.

class tests.test_entities.**SmartProxyTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.SmartProxy*.

setUp()
Set `self.smart_proxy`.

test_import_puppetclasses()
Call *nailgun.entities.SmartProxy.import_puppetclasses()*. Assert that * `environment` parameter is not sent to requests, * proper path is built

class tests.test_entities.**SubscriptionTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.Subscription*.

setUp()
Set `self.subscription`.

test__org_path()
Call nailgun.entities.Subscription._org_path.

test_methods()
Check that several helper methods are sane.

This method is just like *tests.test_entities.GenericTestCase.test_generic()*, but with a slightly different set of mocks. Test the following:

- *nailgun.entities.Subscription.delete_manifest()*
- *nailgun.entities.Subscription.manifest_history()*
- *nailgun.entities.Subscription.refresh_manifest()*
- *nailgun.entities.Subscription.upload()*

It would be ideal if these method could be refactored such that this unit test could be dropped.

class tests.test_entities.**TemplateInputTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.TemplateInput*.

setUp()
Hook method for setting up the test fixture before exercising it.

tearDown()
Hook method for deconstructing the test fixture after testing it.

class tests.test_entities.**UpdatePayloadTestCase**(*methodName='runTest'*)
Tests for extensions of update_payload.

classmethod setUpClass()
Set a server configuration at cls.cfg.

test_content_view_filter_rule()
errata_id field should be 'translated' from DB ID to Errata ID.

test_discovery_rule_search()
Check whether DiscoveryRule updates its search_ field.

The field should be renamed from search_ to search when update_payload is called.

test_generic()
Instantiate a variety of entities and call update_payload.

test_hostcollection_system_uuid()
Check whether HostCollection updates its system_ids field.

The field should be renamed from system_ids to system_uuids when update_payload is called.

test_image()
Check whether Image updates its path_ field.

The field should be renamed from path_ to path when update_payload is called.

test_job_template()
Create a *nailgun.entities.JobTemplate*.

test_media_path()
Check whether Media updates its path_ field.

The field should be renamed from path_ to path when update_payload is called.

test_organization_rh_repo_url()
Check whether `Organization` updates its `redhat_repository_url` field.

The field should be copied from `p['organization']['redhat_repository_url']` to `p['redhat_repository_url']` when `update_payload` is called.

test_os_default_template()
Check, that `os_default_template` serves `template_kind_id` and `provisioning_template_id` only wrapped in sub dict See: Redmine #21169.

test_subnet_from()
Check whether `Subnet` updates its `from_` field.

The field should be renamed from `from_` to `from` when `update_payload` is called.

test_syncplan_sync_date()
Test `update_payload` for different syncplan sync_date formats.

class tests.test_entities.**UpdateTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins.EntityUpdateMixin.update()*.

classmethod setUpClass()
Set a server configuration at `cls.cfg`.

test_generic()
Call `update` on a variety of entities.

class tests.test_entities.**VersionTestCase**(*methodName='runTest'*)
Tests for entities that vary based on the server's software version.

classmethod setUpClass()
Create several server configs with different versions.

test_hostpackage()
Attempt to create a *nailgun.entities.HostPackage* for the Satellite 6.1.

Assert that `HostPackage` raises `NotImplementedError` exception.

test_hostsubscription()
Attempt to create a *nailgun.entities.HostSubscription* for the Satellite 6.1.

Assert that `HostSubscription` raises `NotImplementedError` exception.

test_lifecycle_environment()
Create a *nailgun.entities.LifecycleEnvironment*.

Assert that *nailgun.entities.LifecycleEnvironment.create_payload()* returns a dict having a `prior` key in Satellite 6.0.8 and `prior_id` in Satellite 6.1.0.

test_missing_org_id()
Test methods for which no organization ID is returned.

Affected methods:

- *nailgun.entities.ContentView.read()*
- *nailgun.entities.Product.read()*

Assert that `read_json`, `_get_org` and `read` are all called once, and that the second is called with the correct arguments.

test_repository_fields()
Check *nailgun.entities.Repository*'s fields.

Assert that `Repository` has fields named "docker_upstream_name" and "checksum_type", and that "docker" is a choice for the "content_type" field starting with version 6.1.

test_system()
Attempt to create a *nailgun.entities.System* for the Satellite 6.2.

Assert that `System` raises `DeprecationWarning` exception.

test_systempackage()
Attempt to create a *nailgun.entities.SystemPackage* for the Satellite 6.1.

Assert that `SystemPackage` raises `DeprecationWarning` exception.

class tests.test_entities.**VirtWhoConfigTestCase**(*methodName='runTest'*)
Tests for *nailgun.entities.VirtWhoConfig*

classmethod setUpClass()
Hook method for setting up class fixture before running tests in the class.

tests.test_entities.**make_entity**(*cls*, ***kwargs*)
Helper function to create entity with dummy ServerConfig

2.2.4 tests.test_entity_fields

Unit tests for *nailgun.entity_fields*.

class tests.test_entity_fields.**GenValueTestCase**(*methodName='runTest'*)
Tests for the `gen_value` method on various `*Field` classes.

Classes with complex `gen_value` implementations are broken out into separate test cases.

test_boolean_field()
Test *nailgun.entity_fields.BooleanField.gen_value()*.

test_date_field()
Test *nailgun.entity_fields.DateField.gen_value()*.

test_datetime_field()
Test *nailgun.entity_fields.DateTimeField.gen_value()*.

test_dict_field()
Test *nailgun.entity_fields.DictField.gen_value()*.

Assert that an empty dict is returned by default. There are very few occurrences of dict fields in the entity classes, so it is hard to intelligently produce a randomized value that will be of use in a wide variety of entities. Instead, those few entities override or extend this method.

test_email_field()
Test *nailgun.entity_fields.EmailField.gen_value()*.

Ensure *nailgun.entity_fields.EmailField.gen_value()* returns a unicode string containing the character '@'.

test_float_field()
Test *nailgun.entity_fields.FloatField.gen_value()*.

test_gen_netmask()
Test *nailgun.entity_fields.NetmaskField.gen_value()*.

Assert that the result is in `fauxfactory.constants.VALID_NETMASKS`.

test_ip_address_field()
Test *nailgun.entity_fields.IPAddressField.gen_value()*.

Ensure the value returned is acceptable to `socket.inet_aton`.

test_mac_address_field()
Test *nailgun.entity_fields.MACAddressField.gen_value()*.

Ensure the value returned is a string containing 12 hex digits (either upper or lower case), grouped into pairs of digits and separated by colon characters. For example: `'01:23:45:FE:dc:BA'`

The regex used in this test is inspired by this Q&A: http://stackoverflow.com/questions/7629643/how-do-i-validate-the-format-of-a-mac-address

test_one_to_many_field()
Test *nailgun.entity_fields.OneToManyField.gen_value()*.

test_one_to_one_field()
Test *nailgun.entity_fields.OneToOneField.gen_value()*.

test_url_field()
Test *nailgun.entity_fields.URLField.gen_value()*.

Check that the result can be parsed by the urlparse/urllib.parse module and that the resultant object has a `netloc` attribute.

class tests.test_entity_fields.**IntegerFieldTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_fields.IntegerField*.

test_int_is_returned()
Enture the value returned is an `int`.

test_max_val_arg()
Ensure that the `max_val` argument is respected.

test_min_val_arg()
Ensure that the `min_val` argument is respected.

test_min_val_max_val_args()
Ensure that the `min_val` and `max_val` args are respected.

class tests.test_entity_fields.**StringFieldTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_fields.StringField*.

test_length_arg()
Ensure that the `length` argument is respected.

test_str_is_returned()
Ensure a unicode string at least 1 char long is returned.

test_str_type_arg()
Ensure that the `str_type` argument is respected.

class tests.test_entity_fields.**TestClass**
A class that is used when testing the OneTo{One,Many}Field classes.

2.2.5 tests.test_entity_mixins

Tests for *nailgun.entity_mixins*.

class tests.test_entity_mixins.**EntityCreateMixinTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins.EntityCreateMixin*.

setUp()
Set `self.entity = EntityWithCreate(...)`.

test_create()
Test *nailgun.entity_mixins.EntityCreateMixin.create()*.

test_create_json()
Test *nailgun.entity_mixins.EntityCreateMixin.create_json()*.

test_create_missing()
Call method `create_missing`.

test_create_raw_v1()
What happens if the `create_missing` arg is not specified?

nailgun.entity_mixins.EntityCreateMixin.create_raw() should default to *nailgun.entity_mixins.CREATE_MISSING*. We do not set `CREATE_MISSING` in this test. It is a process-wide variable, and setting it may prevent tests from being run in parallel.

test_create_raw_v2()
What happens if the `create_missing` arg is `True`?

test_create_raw_v3()
What happens if the `create_missing` arg is `False`?

class tests.test_entity_mixins.**EntityDeleteMixinTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins.EntityDeleteMixin*.

setUp()
Set `self.entity = EntityWithDelete(...)`.

test_delete_raw()
Call *nailgun.entity_mixins.EntityDeleteMixin.delete_raw()*.

test_delete_v1()
What happens if the server returns an error HTTP status code?

test_delete_v2()
What happens if the server returns an HTTP ACCEPTED status code?

test_delete_v3()
What happens if the server returns an HTTP NO_CONTENT status?

test_delete_v4()
What happens if the server returns some other stuccess status?

test_delete_v5()
What happens if the server returns an HTTP OK status and empty content?

test_delete_v6()
What happens if the server returns an HTTP OK status and blank only content?

class tests.test_entity_mixins.**EntityReadMixinTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins.EntityReadMixin*.

setUp()
Set `self.entity = EntityWithRead(...)`.

classmethod setUpClass()
Set `cls.test_entity`.

`test_entity` is a class having one to one and one to many fields.

test_missing_value_error()
Raise a *nailgun.entity_mixins.MissingValueError*.

test_read_json()
Call *nailgun.entity_mixins.EntityReadMixin.read_json()*.

test_read_raw()
Call *nailgun.entity_mixins.EntityReadMixin.read_raw()*.

test_read_v1()
Make `read_json` return hashes.

test_read_v2()
Make `read_json` return hashes, but with different field names.

test_read_v3()
Make `read_json` return IDs.

test_read_v4()
Do not ignore any fields.

class tests.test_entity_mixins.**EntitySearchMixinTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins.EntitySearchMixin*.

setUp()
Set `self.cfg` and `self.entity`.

test_search_filter_v1()
Test *nailgun.entity_mixins.EntitySearchMixin.search_filter()*.

Pass a zero-length list of entities.

test_search_filter_v2()
Test *nailgun.entity_mixins.EntitySearchMixin.search_filter()*.

Try to filter on a foreign key field.

test_search_filter_v3()
Test *nailgun.entity_mixins.EntitySearchMixin.search_filter()*.

Pass an invalid filter.

test_search_filter_v4()
Test *nailgun.entity_mixins.EntitySearchMixin.search_filter()*.

Pass in valid entities and filters.

test_search_json()
Call *nailgun.entity_mixins.EntitySearchMixin.search_json()*.

test_search_normalize_v1()
Call `search_normalize`.

Pretend the server returns values for all fields, and an extra value.

test_search_normalize_v2()
Call `search_normalize`.

Pretend the server returns no values for any fields.

test_search_payload_v1()
Call `search_payload`. Generate an empty query.

test_search_payload_v2()
Call `search_payload`. Pass in a query.

test_search_payload_v3()
Call search_payload. Include a variety of fields in a search.

test_search_raw()
Call *nailgun.entity_mixins.EntitySearchMixin.search_raw()*.

test_search_v1()
Test *nailgun.entity_mixins.EntitySearchMixin.search()*.

Pass no arguments.

test_search_v2()
Test *nailgun.entity_mixins.EntitySearchMixin.search()*.

Provide each possible argument.

class tests.test_entity_mixins.**EntityTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins.Entity*.

setUp()
Set self.cfg.

test_bad_value_error()
Try to raise a *nailgun.entity_mixins.BadValueError*.

test_compare()
Assert compare take only not unique fields into account

test_compare_to_null()
Assert entity comparison to None

test_compare_with_filter()
Assert compare can filter fields based on callable

test_entity_get_fields()
Test *nailgun.entity_mixins.Entity.get_fields()*.

test_entity_get_values()
Test *nailgun.entity_mixins.Entity.get_values()*.

test_entity_get_values_v2()
Test *nailgun.entity_mixins.Entity.get_values()*, ensure _path_fields are never returned.

test_eq()
Test method nailgun.entity_mixins.Entity.__eq__.

Assert that __eq__ works comparing all attributes, even from nested structures.

test_eq_none()
Test method nailgun.entity_mixins.Entity.__eq__ against None

Assert that __eq__ returns False when compared to None.

test_init_v1()
Provide no value for the server_config argument.

test_init_v2()
Provide a server config object via DEFAULT_SERVER_CONFIG.

test_no_such_field_error()
Try to raise a *nailgun.entity_mixins.NoSuchFieldError*.

test_path()
Test *nailgun.entity_mixins.Entity.path()*.

test_repr_v1()
Test method `nailgun.entity_mixins.Entity.__repr__`.

Assert that `__repr__` works correctly when no arguments are passed to an entity.

test_repr_v2()
Test method `nailgun.entity_mixins.Entity.__repr__`.

Assert that `__repr__` works correctly when an ID is passed to an entity.

test_repr_v3()
Test method `nailgun.entity_mixins.Entity.__repr__`.

Assert that `__repr__` works correctly when one entity has a foreign key relationship to a second entity.

class tests.test_entity_mixins.**EntityUpdateMixinTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins.EntityUpdateMixin*.

setUp()
Set `self.entity = EntityWithUpdate(...)`.

test_update()
Test *nailgun.entity_mixins.EntityUpdateMixin.update()*.

test_update_json()
Call *nailgun.entity_mixins.EntityUpdateMixin.update_json()*.

test_update_payload_v1()
Call *nailgun.entity_mixins.EntityUpdateMixin.update_payload()*.

Assert that the method behaves correctly given various values for the `field` argument.

test_update_payload_v2()
Call *nailgun.entity_mixins.EntityUpdateMixin.update_payload()*.

Assign `None` to a `OneToOneField` and call `update_payload`.

test_update_raw()
Call *nailgun.entity_mixins.EntityUpdateMixin.update_raw()*.

class tests.test_entity_mixins.**EntityWithCreate**(*server_config=None*, ***kwargs*)
Inherits from *nailgun.entity_mixins.EntityCreateMixin*.

class tests.test_entity_mixins.**EntityWithDelete**(*server_config=None*, ***kwargs*)
Inherits from *nailgun.entity_mixins.EntityDeleteMixin*.

class tests.test_entity_mixins.**EntityWithRead**(*server_config=None*, ***kwargs*)
Inherits from *nailgun.entity_mixins.EntityReadMixin*.

class tests.test_entity_mixins.**EntityWithSearch**(*server_config=None*, ***kwargs*)
Inherits from *nailgun.entity_mixins.EntitySearchMixin*.

class tests.test_entity_mixins.**EntityWithSearch2**(*server_config=None*, ***kwargs*)
An entity with integer, one to one and one to many fields.

class tests.test_entity_mixins.**EntityWithUpdate**(*server_config=None*, ***kwargs*)
Inherits from *nailgun.entity_mixins.EntityUpdateMixin*.

class tests.test_entity_mixins.**MakeEntitiesFromIdsTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins._make_entities_from_ids()*.

setUp()
Set `self.cfg`.

test_pass_in_both()
Let entity_objs_and_ids be an iterable of integers and IDs.

test_pass_in_emtpy_iterable()
Let the entity_objs_and_ids argument be an empty iterable.

test_pass_in_entity_ids()
Let the entity_objs_and_ids arg be an iterable of integers.

test_pass_in_entity_obj()
Let the entity_objs_and_ids arg be an iterable of entities.

class tests.test_entity_mixins.**MakeEntityFromIdTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins._make_entity_from_id()*.

setUp()
Set self.cfg.

test_pass_in_entity_id()
Let the entity_obj_or_id argument be an integer.

test_pass_in_entity_obj()
Let the entity_obj_or_id argument be an entity object.

class tests.test_entity_mixins.**PollTaskTestCase**(*methodName='runTest'*)
Tests for *nailgun.entity_mixins._poll_task()*.

setUp()
Create a bogus server configuration object.

test__poll_task_failure()
What happens when a foreman task completes but does not succeed?

Assert that a *nailgun.entity_mixins.TaskFailedError* exception is raised.

test__poll_task_success()
What happens when a foreman task completes and does succeed?

Assert that the server's response is returned.

class tests.test_entity_mixins.**SampleEntity**(*server_config=None*, ***kwargs*)
Sample entity to be used in the tests

class tests.test_entity_mixins.**SampleEntityThree**(*server_config=None*, ***kwargs*)
An entity with foreign key fields as One to One and ListField.

This class has a *nailgun.entity_fields.OneToOneField* called "one_to_one" pointing to *tests.test_entity_mixins.SampleEntityTwo*.

This class has a *nailgun.entity_fields.ListField* called "list" containing instances of *tests.test_entity_mixins.SampleEntity*.

class tests.test_entity_mixins.**SampleEntityTwo**(*server_config=None*, ***kwargs*)
An entity with foreign key fields.

This class has a *nailgun.entity_fields.OneToManyField* called "one_to_many" pointing to *tests.test_entity_mixins.SampleEntity*.

CHAPTER 3

Signals

New in version 0.27.0.

Note: Signal support is provided by the excellent blinker library. If you wish to enable signal support this library must be installed, though it is not required for nailgun to function.

3.1 Overview

The nailgun signals are provided by blinker_herald module and offers the same features as blinker.

Signals are found within the *nailgun.signals* module. The first positional argument of a signal handler is always *sender* which is a reference to the caller object (self). Each kind of signal receives a different set of arguments but the recommendation is to implement the handlers in form of: *def listener(sender, **kwargs)* as all the arguments will be named depending on the signal.

Note: Post-signals are only called if there were no exceptions raised during the processing of their related function.

Available signals include:

pre_create Called within `create()` prior to performing any actions. Handler named arguments: *create_missing*

post_create Called within `create()` after all actions have completed successfully. Handler named arguments: *entity*

pre_delete Called within `delete()` prior to attempting the delete operation. Handler named arguments: *synchronous*

post_delete Called within `delete()` upon successful deletion of the record. Handler named arguments: *synchronous* and *result*

pre_update Called within `update()` prior to attempting the update operation. Handler named arguments: *fields*

post_update Called within `update()` upon successful update of the record. Handler named arguments: *fields* and *entity*

pre_search Called within `search()` prior to attempting the search operation. Handler named arguments: *fields*, *query* and *filters*

post_search Called within `search()` upon successful search and before returning the results. Handler named arguments: *fields*, *query* and *filters* and *entities*

3.2 Attaching Events

A handler (also called listener) is a function like the following:

```
def set_domain_to_all_entities(sender, **kwargs):
    sender.domain = "http://example.com"
```

The first argument is always the **sender** which defaults to the **self** or **cls** of the caller. Note that handlers can accept only one positional argument, all the others arguments must be named or captured by the `**kwargs` also note that **signal_emitter** argument will always be passed to handlers to keep a reference to caller object in the cases where **sender** argument is explicitly specified in the caller.

Note: NOTE: Always end your handler signature with `**kwargs` to capture all possible arguments otherwise signals will fail if new arguments added to emitter function.

You attach the event handler to a signal that will be emitted to all entities in general:

```
from nailgun import signals
signals.pre_create.connect(set_domain_to_all_entities)
```

Everytime the *.create* method is called the all the connected handlers will be called by signaling and any kind of manipulation can be performed.

Note: If your handler meant to deal only with a specific type of entity you'll need to inspect its instance type. `if isinstance(sender, entities.Organization)` otherwise the action will be performed for all types of entities. Or use a specific sender and connect using `.connect_via()` decorator os specifying **sender** while connecting.

Finally, you can also use signals as decorators to quickly create a number of signals handlers and attach them:

```
from nailgun import entities, signals

@signals.post_create.connect
def post_create_handler(sender, entity):
    if isinstance(entity, entities.Organization):
        # do something in post create only for Organizations
```

CHAPTER 4

Quick Start

This script demonstrates how to create and delete an organization, and how to save some of our work for later re-use:

```
>>> from nailgun.config import ServerConfig
>>> from nailgun.entities import Organization
>>> server_config = ServerConfig(
...     auth=('admin', 'changeme'),      # Use these credentials...
...     url='https://sat1.example.com',  # ...to talk to this server.
... )  # More options are available, e.g. disabling SSL verification.
>>> org = Organization(server_config, name='junk org').create()
>>> org.name == 'junk org'  # Access all attrs likewise, e.g. `org.label`
True
>>> org.delete()
>>> server_config.save()  # Save to disk w/label 'default'. Read with get()
```

This example glosses over *many* features. The *Examples* and *API documentation* sections provide more in-depth documentation.

CHAPTER 5

Why NailGun?

NailGun exists to make working with the Satellite 6 API easier. Here are some of the challenges developers face:

- Existing libraries, such as the Python Requests library, are general purpose tools. As a result, client code can easily become excessively verbose. See the *Examples* document for an example.
- The Satellite 6 API is not RESTful in its design. As a result, even experienced developers may find the API hard to work with.
- The Satellite 6 API is not consistent in its implementation. For example, see the "Payload Generation" section of this blog post.

All of the above issues are compounded by the size of the Satellite 6 API. As of this writing, there are 405 paths. This makes it tough to design compact and elegant client code.

NailGun addresses these issues. NailGun is specialized, it has a consistent design, it abstracts away many painful implementation details and it contains workarounds for certain bugs. Why use a hammer when you can use a nail gun?

CHAPTER 6

Scope and Limitations

NailGun is not an officially supported product. NailGun is a Python-only library, and integration with other languages such as Java or Ruby is not currently a consideration. Although NailGun is developed with a broad audience in mind, it targets Robottelo first and foremost.

NailGun was originally conceived as a set of helper routines internal to Robottelo. It has since been extracted from that code base and turned in to an independently useful library.

Warning: Until version 1.0 is released, functionality will be incomplete, and breaking changes may be introduced. Users are advised to read the release notes closely.

CHAPTER 7

Resources

The *Examples* and *API documentation* sections provide more in-depth documentation.

Join the #robottelo channel on the freenode IRC network to chat with a human. The Robottelo source code contains many real-world examples how NailGun is used, especially the tests/foreman/api/ directory. This blog post provides a glimpse in to the challenges that NailGun is designed to overcome.

CHAPTER 8

Contributing

Contributions are encouraged. The easiest way to contribute is to submit a pull request on GitHub, but patches are welcome no matter how they arrive.

You can use pip and make to quickly set up a development environment:

```
pip install -r requirements.txt -r requirements-dev.txt
make lint
make test
make docs-html
```

Please adhere to the following guidelines:

- All PR's should follow the predetermined pull request template and explain the problem that is addressed. Issues should follow template and explain what the problem is.
- **Maintain Coding Standards**
  - Keep pep8 rules
  - **Follow the same stylistic and logical patterns used in the code**
    - All entity class names and class attributes have to be in the singular format
    - All required entity attributes have to have *required=True* parameter
    - It is preferable to use *alpha* data type for default string values for easier debug procedure
    - In case any workaround is introduced, it is necessary to provide corresponding BZ ID directly into the code docstring
    - All linting and formatting/style checks would be enforced by Travis-CI and PR would be considered broken until checks are passed successfully.
- **Adhere to typical commit guidelines:**
  - Commits should not cause NailGun's unit test to fail. If it does, it will the responsibility of contributor to review those failures and fix them in the same PR's or raise another. The tracking of failures would be responsibility of contributor.

  - Commits should be small and coherent. One commit should address one issue.
  - Commits should have good commit messages.
  - Rebasing is encouraged. Rebasing produces a much nicer commit history than merging.

- To make the review process easy for all reviewers and anyone else interested in the new functionality, please provide some output making use of your changes. Having example of usage in docstring along with your code could really help others to build up on your code. You can add log from Python interactive shell or some tests results (from Robottelo / Foreman Ansible Modules) in PR message, or you can do something completely different - as long as it runs your code, it's fine!
- If PR is applicable for many branches (e.g. master and one of '6.X.z' branches), specify that information in PR message
- **Unit tests**
  - Unit tests are compulsory
  - Unit tests should cover all available actions, for the entity. For eg: Repository Sets, have enable, disable, list_available there should be unit tests exercising these actions.
- When in doubt, ask on IRC. Join #robottelo on freenode

Important to Note :

- **Define Foreman Version labels in Nailgun** if possible, the contributor should set the right version.
- **All PRs should be raised along with Unit tests** The unit tests should be added while adding a new entity or modifying the existing entity or modifying and adding to the core of Nailgun.
- **Test results from upstream devel or from upstream nightly** The API call results are required from PR author to make the review process more firm. Author can provide results from any library that uses the contributed code by running the changes on upstream nightly or from his/her devel box. The interactive python shell output would be acceptable as well.

8.1 Nailgun Review Process

- Travis CI is run, and any issues are resolved by contributor.
- If deemed necessary by contributors/reviewers, an automation run is triggered.
- At least two ACKs are required to merge a pull request.
- At least one ACK must be from a Tier 2 reviewer.
- If a PR requires changes to the CI environment, the "CI Owner" must also provide an ACK.
- Pull request can be merged only when all comments are in resolved state (Resolve conversation button is pressed)

Reviewers & Responsibilities :

- **Both Tiers**
  - Consistently check your projects for new pull requests.
  - Check code for consistency with project guidelines.
  - Pin code dependencies (external libraries), against the version it was tested.
  - Determine if CI and/or test infrastructure changes are required.
  - Provide helpful feedback.
  - Follow-up with any pending feedback, to ensure the PR is resolved quickly.

- **Tier 1 Reviewer**
  - Check the scenarios are valid for the feature or components
  - Suggestions on the feature that can be covered with minimal code additions/changes.
- **Tier 2 Reviewer**
  - Check for logical errors.
  - Guide the contributor on how to fix mistakes and any other improvements.
  - Ideally if not done by contributor, identify code that may impact third-party projects (e.g Nailgun -> Robottelo , FAM), file issues if PR causes breakages in relevant projects

8.2 Nailgun Release Process

Projects that require nailgun, would often rely on the released Nailgun from Pypi. We intended to make the release process more formal and standard to deliver timely and stable code base to consumer projects.

- Nailgun Releases should be performed against stable branches.
- No historical release support.
- Nailgun will follow request based minor releases.

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