
Pacifica Metadata Documentation

David Brown

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The Pacifica Metadata service provides metadata storage about the files stored in Pacifica.

CHAPTER 1

Installation

The Pacifica software is available through PyPi so creating a virtual environment to install is what is shown below. Please keep in mind compatibility with the Pacifica Core services.

1.1 Installation in Virtual Environment

These installation instructions are intended to work on both Windows, Linux, and Mac platforms. Please keep that in mind when following the instructions.

Please install the appropriate tested version of Python for maximum chance of success.

1.1.1 Linux and Mac Installation

```
mkdir ~/.virtualenvs
python -m virtualenv ~/.virtualenvs/pacifica
. ~/.virtualenvs/pacifica/bin/activate
pip install pacifica-metadata
```

1.1.2 Windows Installation

This is done using PowerShell. Please do not use Batch Command.

```
mkdir "$Env:LOCALAPPDATA\virtualenvs"
python.exe -m virtualenv "$Env:LOCALAPPDATA\virtualenvs\pacifica"
& "$Env:LOCALAPPDATA\virtualenvs\pacifica\Scripts\activate.ps1"
pip install pacifica-metadata
```


CHAPTER 2

Configuration

The Pacifica Core services require two configuration files. The REST API utilizes [CherryPy](#) and review of their [configuration documentation](#) is recommended. The service configuration file is a INI formatted file containing configuration for database connections.

2.1 CherryPy Configuration File

An example of Metadata server CherryPy configuration:

```
[global]
log.screen: True
log.access_file: 'access.log'
log.error_file: 'error.log'
server.socket_host: '0.0.0.0'
server.socket_port: 8121

[/]
request.dispatch: cherrypy.dispatch.MethodDispatcher()
tools.response_headers.on: True
tools.response_headers.headers: [('Content-Type', 'application/json')]
```

2.2 Service Configuration File

The service configuration is an INI file and an example is as follows:

```
[database]
; This section contains database connection configuration

; peewee_url is defined as the URL PeeWee can consume.
; http://docs.peewee-orm.com/en/latest/peewee/database.html#connecting-using-a-
↪ database-url
```

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```
peewee_url = postgresql://pacifica:metadata@localhost:5432/pacifica_metadata

; connect_attempts are the number of times the service will attempt to
; connect to the database if unavailable.
connect_attempts = 10

; connect_wait are the number of seconds the service will wait between
; connection attempts until a successful connection to the database.
connect_wait = 20

; enable debug logging of database queries
debug_logging = False

[notifications]
; This section describes where the notifications server is.

; Disable eventing for the metadata service.
disabled = False

; URL to the receive endpoint on the notifications server.
url = http://127.0.0.1:8070/receive

[elasticsearch]
; This section describes configuration to contact elasticsearch

; URL to the elasticsearch server
url = http://127.0.0.1:9200
```

2.3 Starting the Service

Starting the Metadata service can be done by two methods. However, understanding the requirements and how they apply to REST services is important to address as well. Using the internal CherryPy server to start the service is recommended for Windows platforms. For Linux/Mac platforms it is recommended to deploy the service with [uWSGI](#).

2.3.1 Deployment Considerations

The Metadata service is the authoritative metadata store for all data in Pacifica. This means any queries needed by any other Pacifica services goes through a REST endpoint on this service. As different services require performance characteristics of each endpoint it is important to have a deployment mechanism that behaves consistently.

The CherryPy service works well enough for many of the queries. However, for performance and scalability using uWSGI is preferred. Also putting system memory consumption limits on the service is also recommended. As you get more data in the system some queries will grow to consume memory beyond a single system.

As data volume in Pacifica and load on queries increase the Metadata service works better running in uWSGI. The chance increases of a query consuming all the system memory on the server. As CherryPy is a threaded application Linux will kill the process to free up memory. This results in the service going down entirely and not servicing requests. uWSGI takes care of this by utilizing a forking model for handling requests. Using uWSGI, a child process is killed and a 500 is returned to the client. uWSGI continues handling requests, cleans up the dead child and spawns new ones.

2.3.2 CherryPy Server

To make running the Metadata service using the CherryPy's builtin server easier we have a command line entry point.

```
$ pacifica-metadata --help
usage: pacifica-metadata [-h] [--cpconfig CPCONFIG] [-c CONFIG] [-p PORT]
                        [-a ADDRESS]

Run the metadata server.

optional arguments:
  -h, --help            show this help message and exit
  --cpconfig CPCONFIG   cherrypy config file
  -c CONFIG, --config CONFIG
                        database config file
  -p PORT, --port PORT  port to listen on
  -a ADDRESS, --address ADDRESS
                        address to listen on

$ pacifica-metadata-cmd dbsync
$ pacifica-metadata
[09/Jan/2019:09:17:26] ENGINE Listening for SIGTERM.
[09/Jan/2019:09:17:26] ENGINE Bus STARTING
[09/Jan/2019:09:17:26] ENGINE Set handler for console events.
[09/Jan/2019:09:17:26] ENGINE Started monitor thread 'Autoreloader'.
[09/Jan/2019:09:17:26] ENGINE Serving on http://0.0.0.0:8121
[09/Jan/2019:09:17:26] ENGINE Bus STARTED
```

2.3.3 uWSGI Server

To make running the UniqueID service using uWSGI easier we have a module to be included as part of the uWSGI configuration. uWSGI is very configurable and can use this module many different ways. Please consult the [uWSGI Configuration](#) documentation for more complicated deployments.

```
$ pip install uwsgi
$ uwsgi --http-socket :8121 --master --module pacifica.metadata.wsgi
```


This covers all the objects and their relationships to other objects in the model.

3.1 All The Objects

3.1.1 Journals

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
impact_factor	FloatField		NOT NULL
encoding	CharField		NOT NULL
website_url	CharField		NOT NULL
name	CharField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL
created	ExtendDateTimeField		NOT NULL

3.1.2 Users

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
middle_initial	CharField		NOT NULL
last_name	CharField		NOT NULL
encoding	CharField		NOT NULL
network_id	CharField		NULL
first_name	CharField		NOT NULL
email_address	CharField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL

3.1.3 Institutions

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
association_cd	CharField		NOT NULL
name	TextField		NOT NULL
encoding	CharField		NOT NULL
is_foreign	BooleanField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL
created	ExtendDateTimeField		NOT NULL

3.1.4 Projects

3.1.5 Instruments

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
display_name	CharField		NOT NULL
name	CharField		NOT NULL
encoding	CharField		NOT NULL
name_short	CharField		NOT NULL
active	BooleanField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL

3.1.6 InstrumentCustodian

Column	Type	Reference	Attributes
custodian	ForeignKeyField	Users.id	NOT NULL
instrument	ForeignKeyField	Instruments.id	NOT NULL
deleted	ExtendDateTimeField		NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL

3.1.7 Citations

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
article_title	TextField		NOT NULL
encoding	CharField		NOT NULL
abstract_text	TextField		NOT NULL
journal	ForeignKeyField	Journals.id	NOT NULL
doi_reference	CharField		NOT NULL
release_authorization_id	CharField		NOT NULL
journal_volume	IntegerField		NOT NULL
page_range	CharField		NOT NULL
xml_text	TextField		NOT NULL
journal_issue	IntegerField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL
created	ExtendDateTimeField		NOT NULL

3.1.8 Contributors

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
middle_initial	CharField		NOT NULL
last_name	CharField		NOT NULL
encoding	CharField		NOT NULL
first_name	CharField		NOT NULL
dept_code	CharField		NOT NULL
institution	ForeignKeyField	Institutions.id	NOT NULL
person	ForeignKeyField	Users.id	NOT NULL
updated	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL
created	ExtendDateTimeField		NOT NULL

3.1.9 InstitutionPerson

Column	Type	Reference	Attributes
person	ForeignKeyField	Users.id	NOT NULL
institution	ForeignKeyField	Institutions.id	NOT NULL
deleted	ExtendDateTimeField		NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL

3.1.10 Keywords

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
keyword	CharField		NOT NULL
encoding	CharField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL

3.1.11 Groups

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
name	CharField		NOT NULL
encoding	CharField		NOT NULL
is_admin	BooleanField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL
created	ExtendDateTimeField		NOT NULL

3.1.12 AnalyticalTools

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
name	CharField		NOT NULL
encoding	CharField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL
created	ExtendDateTimeField		NOT NULL

3.1.13 CitationContributor

Column	Type	Reference	Attributes
author	ForeignKeyField	Contributors.id	NOT NULL
citation	ForeignKeyField	Citations.id	NOT NULL
author_precedence	IntegerField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL

3.1.14 CitationKeyword

Column	Type	Reference	Attributes
citation	ForeignKeyField	Citations.id	NOT NULL
keyword	ForeignKeyField	Keywords.id	NOT NULL
deleted	ExtendDateTimeField		NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL

3.1.15 ProjectInstrument

3.1.16 ProjectParticipant

3.1.17 ProjectGroup

3.1.18 CitationProject

3.1.19 Transactions

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
description	TextField		NULL
suspense_date	ExtendDateField		NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL

3.1.20 TransSIP

3.1.21 TransSAP

3.1.22 Files

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
mimetype	CharField		NOT NULL
transaction	ForeignKeyField	Transactions.id	NOT NULL
name	CharField		NOT NULL
encoding	CharField		NOT NULL
hashsum	CharField		NOT NULL
ctime	ExtendDateTimeField		NOT NULL
hashtype	CharField		NOT NULL
suspense_date	ExtendDateField		NULL
subdir	CharField		NOT NULL
mtime	ExtendDateTimeField		NOT NULL
size	BigIntegerField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL
created	ExtendDateTimeField		NOT NULL

3.1.23 Keys

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
encoding	CharField		NOT NULL
key	CharField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL

3.1.24 Values

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
encoding	CharField		NOT NULL
value	CharField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL

3.1.25 FileKeyValue

Column	Type	Reference	Attributes
key	ForeignKeyField	Keys.id	NOT NULL
value	ForeignKeyField	Values.id	NOT NULL
file	ForeignKeyField	Files.id	NOT NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL

3.1.26 TransactionKeyValue

Column	Type	Reference	Attributes
transaction	ForeignKeyField	Transactions.id	NOT NULL
value	ForeignKeyField	Values.id	NOT NULL
key	ForeignKeyField	Keys.id	NOT NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL

3.1.27 UserGroup

Column	Type	Reference	Attributes
person	ForeignKeyField	Users.id	NOT NULL
group	ForeignKeyField	Groups.id	NOT NULL
deleted	ExtendDateTimeField		NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL

3.1.28 InstrumentGroup

Column	Type	Reference	Attributes
instrument	ForeignKeyField	Instruments.id	NOT NULL
group	ForeignKeyField	Groups.id	NOT NULL
deleted	ExtendDateTimeField		NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL

3.1.29 AToolProject

3.1.30 AToolTransaction

Column	Type	Reference	Attributes
analytical_tool	ForeignKeyField	AnalyticalTools.id	NOT NULL
transaction	ForeignKeyField	Transactions.id	NOT NULL
deleted	ExtendDateTimeField		NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL

3.1.31 TransactionRelease

Column	Type	Reference	Attributes
authorized_person	ForeignKeyField	Users.id	NOT NULL
transaction	ForeignKeyField	Transactions.id	NOT NULL, PRIMARY KEY
deleted	ExtendDateTimeField		NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL

3.1.32 DOIEntries

Column	Type	Reference	Attributes
status	CharField		NOT NULL
doi	CharField		NOT NULL, PRIMARY KEY
encoding	CharField		NOT NULL
site_url	CharField		NOT NULL
released	BooleanField		NOT NULL
creator	ForeignKeyField	Users.id	NOT NULL
updated	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL
created	ExtendDateTimeField		NOT NULL

3.1.33 DOIAuthors

Column	Type	Reference	Attributes
id	AutoField		NOT NULL, PRIMARY KEY
last_name	CharField		NOT NULL
first_name	CharField		NOT NULL
email	CharField		NULL
affiliation	CharField		NULL
orcid	CharField		NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL

3.1.34 DOITransaction

Column	Type	Reference	Attributes
transaction	ForeignKeyField	TransactionRelease.transaction	NOT NULL
doi	ForeignKeyField	DOIEntries.doi	NOT NULL, PRIMARY KEY
deleted	ExtendDateTimeField		NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL

3.1.35 CitationTransaction

Column	Type	Reference	Attributes
transaction	ForeignKeyField	TransactionRelease.transaction	NOT NULL
citation	ForeignKeyField	Citations.id	NOT NULL
deleted	ExtendDateTimeField		NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL

3.1.36 CitationDOI

Column	Type	Reference	Attributes
doi	ForeignKeyField	DOIEntries.doi	NOT NULL
citation	ForeignKeyField	Citations.id	NOT NULL
deleted	ExtendDateTimeField		NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL

3.1.37 DOIAuthorMapping

Column	Type	Reference	Attributes
doi	ForeignKeyField	DOIEntries.doi	NOT NULL
author	ForeignKeyField	DOIAuthors.id	NOT NULL
author_order	IntegerField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL

3.1.38 DOIInfo

Column	Type	Reference	Attributes
doi	ForeignKeyField	DOIEntries.doi	NOT NULL
value	CharField		NOT NULL
key	CharField		NOT NULL
updated	ExtendDateTimeField		NOT NULL
created	ExtendDateTimeField		NOT NULL
deleted	ExtendDateTimeField		NULL

3.2 Note

This document is generated by the `GenMetadataModelMD.py` script and needs to be regenerated whenever changes are made to the model.

CHAPTER 4

Example Usage

4.1 The API

The Pacifica Metadata Services API covers the complete object life-cycle: create, read, update, and delete.

The examples in this section demonstrate the life-cycle of the `User` object using a Pacifica Metadata Services deployment at `http://localhost:8121/` (see “Installing the Service” section).

4.1.1 Creating an Object

To create a new `User` object, start by generating a new file `create.json` to store the JSON data:

```
{
  "_id": 127,
  "email_address": "john@doe.com",
  "first_name": "John",
  "last_name": "Doe",
  "middle_initial": "",
  "network_id": "guest"
}
```

Then, provide the contents of the new file as the body for a HTTP PUT request using the `curl` command:

```
curl -X PUT -T create.json 'http://localhost:8121/users'
```

4.1.2 Reading an Object

To retrieve the JSON data for the `User` object that was just created, send a HTTP GET request (with the `_id` attribute as a query parameter) using the `curl` command:

```
curl -X GET 'http://localhost:8121/users?_id=127'
```

The response body is a JSON array of JSON objects. Because the query uses the `_id` attribute, a primary key, the JSON array contains either zero (no match) or one (match) JSON objects:

```
[
  {
    "_id": 127,
    "email_address": "john@doe.com",
    "encoding": "UTF8",
    "first_name": "John",
    "last_name": "Doe",
    "middle_initial": "",
    "network_id": "guest",
    "created": 1459204793,
    "deleted": null,
    "updated": 1459204793
  }
]
```

Optionally, query on any other parts of an object by using its attributes as query parameters, e.g., to query on both the `first_name` and `last_name` attributes using the `curl` command:

```
curl -X GET 'http://localhost:8121/users?last_name=Doe&first_name=John'
```

Response bodies for queries on other parts may contain JSON data for more than one match:

```
[
  {
    "_id": 127,
    "email_address": "john@doe.com",
    "encoding": "UTF8",
    "first_name": "John",
    "last_name": "Doe",
    "middle_initial": "",
    "network_id": "guest",
    "created": 1459204793,
    "deleted": null,
    "updated": 1459204793
  },
  ...
]
```

Pagination

By default, Pacifica Metadata Services API endpoints respond with JSON data for all matching objects. Hence, the response size, and therefore, the response time is proportional to the number of matches.

To reduce the response time, but still enable access to all matching objects, all Pacifica Metadata Services API endpoints offer a “pagination” capability, where large responses are subdivided into “pages” with a fixed number of matching objects “per page”.

For example, 100 matching objects are divided into 4 pages of 25 matching objects per page:

- Page 1 = Matching objects 1 to 25
- Page 2 = Matching objects 26 to 50
- Page 3 = Matching objects 51 to 75
- Page 4 = Matching objects 76 to 100

- Page >4 = No matching objects

Use the `page_number` and `items_per_page` query parameters to specify the number of pages and the number of matching objects per page, respectively, e.g., to retrieve the 7th page of 10 Users per page using the `curl` command:

```
curl -X GET 'http://localhost:8121/users?items_per_page=10&page_number=7'
```

4.1.3 Updating an Object

To modify a preexisting object, use the query parameters to identify the object (or objects) and then send a HTTP POST request with the JSON data for the modified attributes as the request body, e.g., to modify the `network_id` attribute, start by generating a new file `update.json` to store the JSON data:

```
{
  "network_id": "example"
}
```

Then, provide the contents of the new file as the body for a HTTP POST request using the `curl` command:

```
curl -X POST -T update.json 'http://localhost:8121/users?last_name=Doe&first_name=John'
↪ '
```

Finally, verify the modifications by retrieving the most recent version of the object (see “Reading an Object” section), e.g., using the `curl` command:

```
curl -X GET 'http://localhost:8121/users?_id=127'
```

The updated attribute is automatically set to the current time when an object is modified:

```
[
  {
    "_id": 127,
    "email_address": "john@doe.com",
    "encoding": "UTF8",
    "first_name": "John",
    "last_name": "Doe",
    "middle_initial": "",
    "network_id": "example",
    "created": 1459204793,
    "deleted": null,
    "updated": 1459205143
  }
]
```

4.1.4 (Soft) Deleting an Object

To mark an object as deleted, i.e., to “soft delete” an object, send a HTTP DELETE request using the `curl` command:

```
curl -X DELETE 'http://localhost:8121/users?_id=127'
```

NOTE Don’t worry! The object isn’t really deleted.

Finally, verify the “soft delete” by retrieving the most recent version of the object (see “Reading an Object” section), e.g., using the `curl` command:

```
curl -X GET 'http://localhost:8121/users?_id=127'
```

The deleted attribute is automatically set to the current time when an object is “soft deleted”:

```
[
  {
    "_id": 127,
    "email_address": "john@doe.com",
    "encoding": "UTF8",
    "first_name": "John",
    "last_name": "Doe",
    "middle_initial": "",
    "network_id": "example",
    "created": 1459204793,
    "deleted": 1459205341,
    "updated": 1459205143
  }
]
```

Metadata Python Module

5.1 Configuration Python Module

Configuration reading and validation module.

```
pacifica.metadata.config.get_config()
```

Return the ConfigParser object with defaults set.

Currently metadata API doesn't work with SQLite the queries are too complex and it only is supported with MySQL and PostgreSQL.

5.2 Globals Python Module

Global configuration options expressed in environment variables.

5.3 ORM Python Module

5.3.1 All Objects Python Module

Core modules.

This loads all model objects and contains global operations on those objects.

5.3.2 Globals Python Module

Globals module for orm module.

5.3.3 Base Python Module

Pacifica Metadata ORM Base Class.

This class implements the basic functionality needed for all metadata objects in the metadata model for Pacifica.

PacificaModel.

Base class inherits from the PeeWee ORM Model class to create required fields by all objects and serialization methods for the base fields.

There are also CherryPy methods for creating, updating, getting and deleting these objects in from a web service layer.

```
class pacifica.metadata.orm.base.PacificaModel (*args, **kwargs)
```

Basic fields for an object within the model.

Attributes:

Name	Description
created	When was the object created
updated	When was the object last changed
deleted	When was the object deleted

DoesNotExist

alias of PacificaModelDoesNotExist

static **_bool_translate** (*thing*)

Translate the thing into a boolean.

_build_object (*attr*)

static **_date_operator_compare** (*date, kwargs, dt_converts=<function datetime_converts>*)

_generate_fk_obj_list (*obj_ref*)

_meta = <peewee.Metadata object>

_schema = <peewee.SchemaManager object>

_set_date_part (*date_part, obj*)

_set_datetime_part (*time_part, obj*)

_set_only_if (*key, obj, dest_attr, func*)

_set_only_if_by_name (*attr, obj, cls*)

classmethod **_where_attr_clause** (*where_clause, kwargs, keys*)

Grab keys and operators out of kwargs and return where clause.

classmethod **available_hash_list** ()

Generate a hashable structure of all keys and values of keys.

This structure allows for easy evaluation of updates or current vs old data for any object in the database.

classmethod **cls_foreignkey_rel_mods** ()

Return a collection of related models for a given foreignkey.

classmethod **cls_foreignkeys** ()

Provide the foreign keys of the class as a list of attrs.

classmethod **cls_revforeignkeys** ()

Provide the rev foreign keys of the class as a list of attrs.

```

created = <ExtendDateTimeField:  PacificaModel.created>
deleted = <ExtendDateTimeField:  PacificaModel.deleted>
from_hash (obj)
    Convert the hash objects into object fields if they are present.
static get_append_item (obj_ref, fk_item_name, fk_obj_list)
    Generate the proper item to append to the newly built object.
classmethod get_object_info (where_clause=None)
    Get model and field information about the model class.
classmethod get_primary_keys ()
    Return the primary keys for the object.
id = <AutoField:  PacificaModel.id>
classmethod last_change_date ()
    Find the last changed date for the object.
to_hash (**flags)
    Convert the base object fields into serializable attributes in a hash.
updated = <ExtendDateTimeField:  PacificaModel.updated>
classmethod where_clause (kwargs)
    PeeWee specific extension meant to be passed to a PeeWee get or select.
pacifica.metadata.orm.base.db_connection_decorator (func)
    Wrap a method with a database connect and close.

```

5.3.4 Sync Python Module

The ORM Sync Module.

```

class pacifica.metadata.orm.sync.MetadataSystem (*args, **kwargs)
    Metadata Schema Version Model.

    DoesNotExist
        alias of MetadataSystemDoesNotExist

    _meta = <peewee.Metadata object>

    _schema = <peewee.SchemaManager object>

    classmethod get_or_create_version ()
        Set or create the current version of the schema.

    classmethod get_version ()
        Get the current version as a tuple.

    classmethod is_equal ()
        Check to see if schema version matches code version.

    classmethod is_safe ()
        Check to see if the schema version is safe for the code.

    part = <CharField:  MetadataSystem.part>

    value = <IntegerField:  MetadataSystem.value>

```

class `pacifica.metadata.orm.sync.OrmSync`

Special module for syncing the orm.

This module should incorporate a schema migration strategy.

The supported versions migrating forward must be in a versions array containing tuples for major and minor versions.

The version tuples are directly translated to method names in the `orm_update` class for the update between those versions.

Example Methods:

```
class OrmSync:
    versions = [
        (0, 1),
        (0, 2),
        (1, 0),
        (1, 1)
    ]

    def update_0_1_to_0_2():
        pass
    def update_0_2_to_1_0():
        pass
```

The body of the update should follow peewee migration practices. <http://docs.peewee-orm.com/en/latest/peewee/playhouse.html#migrate>

static `close()`

Close the database connection.

classmethod `connect_and_check()`

Connect and check the version.

static `create_tables()`

Create the tables for the objects if they exist.

static `dbconn_blocking()`

Wait for the db connection.

classmethod `update_0_1_to_1_0()`

Update schema to 1.0.

classmethod `update_1_0_to_2_0()`

Update to the schema to move proposal to project.

classmethod `update_2_0_to_2_1()`

Update to the schema to move proposal to project.

classmethod `update_2_1_to_3_0()`

Update to the schema to create relationships.

classmethod `update_tables()`

Update the database to the current version.

versions = [(0, 1), (1, 0), (2, 0), (2, 1), (3, 0)]

5.3.5 Analytical Tools Python Module

Contains the model for metadata analytical tools.

class `pacifica.metadata.orm.analytical_tools.AnalyticalTools(*args, **kwargs)`
 Keys model class for metadata.

Attributes:

Name	Description
name	generic tool name
encoding	encoding for the name

DoesNotExist

alias of `AnalyticalToolsDoesNotExist`

`_meta = <peewee.Metadata object>`

`_schema = <peewee.SchemaManager object>`

`created = <ExtendDateTimeField: AnalyticalTools.created>`

`deleted = <ExtendDateTimeField: AnalyticalTools.deleted>`

`encoding = <CharField: AnalyticalTools.encoding>`

`from_hash(obj)`

Convert the hash to the object.

`id = <AutoField: AnalyticalTools.id>`

`name = <CharField: AnalyticalTools.name>`

`projects`

`to_hash(**flags)`

Convert the object to a hash.

`transactions`

`transsap`

`updated = <ExtendDateTimeField: AnalyticalTools.updated>`

`classmethod where_clause(kwargs)`

PeeWee specific where clause used for search.

5.3.6 Analytical Tool Project Python Module

TransactionKeyValue links Transactions and Keys and Values objects.

class `pacifica.metadata.orm.atool_project.AToolProject(*args, **kwargs)`
 TransactionKeyValue attributes are foreign keys.

Attributes:

DoesNotExist

alias of `AToolProjectDoesNotExist`

`_meta = <peewee.Metadata object>`

`_schema = <peewee.SchemaManager object>`

`analytical_tool = <ForeignKeyField: AToolProject.analytical_tool>`

`analytical_tool_id = <ForeignKeyField: AToolProject.analytical_tool>`

`created = <ExtendDateTimeField: AToolProject.created>`

```
deleted = <ExtendDateTimeField: AToolProject.deleted>
from_hash(obj)
    Convert the hash into the object.
project = <ForeignKeyField: AToolProject.project>
project_id = <ForeignKeyField: AToolProject.project>
to_hash(**flags)
    Convert the object to a hash.
updated = <ExtendDateTimeField: AToolProject.updated>
classmethod where_clause(kwargs)
    Where clause for the various elements.
```

5.3.7 Analytical Tool Transaction Python Module

TransactionKeyValue links Transactions and Keys and Values objects.

```
class pacifica.metadata.orm.atool_transaction.AToolTransaction(*args,
                                                                **kwargs)
    TransactionKeyValue attributes are foreign keys.
```

Attributes:

Name	Description
transaction	Link to the Transactions model
analytical_tool	Link to the AnalyticalTools model

```
DoesNotExist
    alias of AToolTransactionDoesNotExist
_meta = <peewee.Metadata object>
_schema = <peewee.SchemaManager object>
analytical_tool = <ForeignKeyField: AToolTransaction.analytical_tool>
analytical_tool_id = <ForeignKeyField: AToolTransaction.analytical_tool>
created = <ExtendDateTimeField: AToolTransaction.created>
deleted = <ExtendDateTimeField: AToolTransaction.deleted>
from_hash(obj)
    Convert the hash into the object.
to_hash(**flags)
    Convert the object to a hash.
transaction = <ForeignKeyField: AToolTransaction.transaction>
transaction_id = <ForeignKeyField: AToolTransaction.transaction>
updated = <ExtendDateTimeField: AToolTransaction.updated>
classmethod where_clause(kwargs)
    Where clause for the various elements.
```


5.3.8 Citations Python Module

Citations model for tracking journal articles.

class `pacifica.metadata.orm.citations.Citations(*args, **kwargs)`

Citations model tracks metadata for a journal article.

Attributes:

Name	Description
<code>article_title</code>	The title of the article
<code>journal</code>	Link to the journal it was published in
<code>journal_volume</code>	Journal volume for the publication
<code>journal_issue</code>	Journal issue for the publication
<code>page_range</code>	Pages in issue/volume was the article
<code>abstract_text</code>	Abstract from the article in the journal
<code>xml_text</code>	xml blob for the citation
<code>release_authorization_id</code>	External link to authorization metadata about the released article
<code>doi_reference</code>	Digital Object Identifier for the citation
encoding Language this metadata is in not the article itself	

DoesNotExist

alias of `CitationsDoesNotExist`

`_meta = <peewee.Metadata object>`

`_schema = <peewee.SchemaManager object>`

`abstract_text = <TextField: Citations.abstract_text>`

`article_title = <TextField: Citations.article_title>`

`authors`

`created = <ExtendDateTimeField: Citations.created>`

`deleted = <ExtendDateTimeField: Citations.deleted>`

`doi_entries`

`doi_reference = <CharField: Citations.doi_reference>`

`encoding = <CharField: Citations.encoding>`

`from_hash(obj)`

Convert the object into the citation object fields.

`id = <AutoField: Citations.id>`

`journal = <ForeignKeyField: Citations.journal>`

`journal_id = <ForeignKeyField: Citations.journal>`

```
journal_issue = <IntegerField: Citations.journal_issue>
journal_volume = <IntegerField: Citations.journal_volume>
keywords
page_range = <CharField: Citations.page_range>
projects
release_authorization_id = <CharField: Citations.release_authorization_id>
release_entries
to_hash(**flags)
    Convert the citation fields to a serializable hash.
updated = <ExtendDateTimeField: Citations.updated>
classmethod where_clause(kwargs)
    Generate the PeeWee where clause used in searching.
xml_text = <TextField: Citations.xml_text>
```

5.3.9 Citation Contributor Python Module

CitationContributor links citations and their authors.

```
class pacifica.metadata.orm.citation_contributor.CitationContributor(*args,
                                                                    **kwargs)
```

CitationsContributors data model.

Attributes:

Name	Description
citation	Link to the Citation model
author	Link to the Contributor model
author_precedence	Order of the Author in the Citation

DoesNotExist

alias of CitationContributorDoesNotExist

```
_meta = <peewee.Metadata object>
```

```
_schema = <peewee.SchemaManager object>
```

```
author = <ForeignKeyField: CitationContributor.author>
```

```
author_id = <ForeignKeyField: CitationContributor.author>
```

```
author_precedence = <IntegerField: CitationContributor.author_precedence>
```

```
citation = <ForeignKeyField: CitationContributor.citation>
```

```
citation_id = <ForeignKeyField: CitationContributor.citation>
```

```
created = <ExtendDateTimeField: CitationContributor.created>
```

```
deleted = <ExtendDateTimeField: CitationContributor.deleted>
```

```
from_hash(obj)
```

Convert the hash into the object.

```

to_hash (**flags)
    Convert the object to a hash.

updated = <ExtendDateTimeField: CitationContributor.updated>

classmethod where_clause (kwargs)
    Where clause for the various elements.

```

5.3.10 Citation Doi Python Module

Keywords linked to citations.

```

class pacifica.metadata.orm.citation_doi.CitationDOI (*args, **kwargs)
    CitationDOI Model.

```

Attributes:

Name	Description
doi	Link to the DOI model
citation	Link to the Citations model

```

DoesNotExist
    alias of CitationDOIDoesNotExist

_meta = <peewee.Metadata object>

_schema = <peewee.SchemaManager object>

citation = <ForeignKeyField: CitationDOI.citation>

citation_id = <ForeignKeyField: CitationDOI.citation>

created = <ExtendDateTimeField: CitationDOI.created>

deleted = <ExtendDateTimeField: CitationDOI.deleted>

doi = <ForeignKeyField: CitationDOI.doi>

doi_id = <ForeignKeyField: CitationDOI.doi>

from_hash (obj)
    Convert the hash to the object.

to_hash (**flags)
    Convert the object to a hash.

updated = <ExtendDateTimeField: CitationDOI.updated>

classmethod where_clause (kwargs)
    Where clause for the various elements.

```

5.3.11 Citation Keyword Python Module

Keywords linked to citations.

```

class pacifica.metadata.orm.citation_keyword.CitationKeyword (*args, **kwargs)
    CitationKeywords Model.

```

Attributes:

Name	Description
citation	Link to the Citation model
keyword	Link to the Keyword model

DoesNotExist

alias of `CitationKeywordDoesNotExist`

`_meta` = `<peewee.Metadata object>`

`_schema` = `<peewee.SchemaManager object>`

`citation` = `<ForeignKeyField: CitationKeyword.citation>`

`citation_id` = `<ForeignKeyField: CitationKeyword.citation>`

`created` = `<ExtendDateTimeField: CitationKeyword.created>`

`deleted` = `<ExtendDateTimeField: CitationKeyword.deleted>`

`from_hash` (*obj*)

Convert the hash into the object.

`keyword` = `<ForeignKeyField: CitationKeyword.keyword>`

`keyword_id` = `<ForeignKeyField: CitationKeyword.keyword>`

`to_hash` (***flags*)

Convert the object to a hash.

`updated` = `<ExtendDateTimeField: CitationKeyword.updated>`

`classmethod where_clause` (*kwargs*)

Where clause for the various elements.

5.3.12 Citation Project Python Module

Citation project relationship.

class `pacifica.metadata.orm.citation_project.CitationProject` (**args, **kwargs*)

Relates citations with projects.

Attributes:

Name	Description
citation	Link to the Citation model
project	Link to the Project model

DoesNotExist

alias of `CitationProjectDoesNotExist`

`_meta` = `<peewee.Metadata object>`

`_schema` = `<peewee.SchemaManager object>`

`citation` = `<ForeignKeyField: CitationProject.citation>`

`citation_id` = `<ForeignKeyField: CitationProject.citation>`

`created` = `<ExtendDateTimeField: CitationProject.created>`

```

deleted = <ExtendDateTimeField: CitationProject.deleted>
from_hash(obj)
    Convert the hash into the object.
project = <ForeignKeyField: CitationProject.project>
project_id = <ForeignKeyField: CitationProject.project>
to_hash(**flags)
    Convert the object to a hash.
updated = <ExtendDateTimeField: CitationProject.updated>
classmethod where_clause(kwargs)
    Where clause for the various elements.

```

5.3.13 Citation Transaction Python Module

Keywords linked to citations.

```

class pacifica.metadata.orm.citation_transaction.CitationTransaction(*args,
                                                                    **kwargs)
    CitationTransaction Model.

    Attributes:

    DoesNotExist
        alias of CitationTransactionDoesNotExist

    _meta = <peewee.Metadata object>
    _schema = <peewee.SchemaManager object>
    citation = <ForeignKeyField: CitationTransaction.citation>
    citation_id = <ForeignKeyField: CitationTransaction.citation>
    created = <ExtendDateTimeField: CitationTransaction.created>
    deleted = <ExtendDateTimeField: CitationTransaction.deleted>
    from_hash(obj)
        Convert the hash to the object.
    to_hash(**flags)
        Convert the object to a hash.
    transaction = <ForeignKeyField: CitationTransaction.transaction>
    transaction_id = <ForeignKeyField: CitationTransaction.transaction>
    updated = <ExtendDateTimeField: CitationTransaction.updated>
    classmethod where_clause(kwargs)
        Where clause for the various elements.

```

5.3.14 Contributors Python Module

Contributors model describes an author to a journal article.

```

class pacifica.metadata.orm.contributors.Contributors(*args, **kwargs)
    Contributors object and associated fields.

```

Attributes:

Name	Description
user	Link to the User model
institution	Link to the Institution model
first_name	Users first name as it appears in the citation
middle_initial	Users middle initial as it appears in the citation
last_name	Users last name as it appears in the citation
dept_code	Department of the institution the User was a member of at the time of the citation
encoding	Language encoding of the attributes above

DoesNotExist

alias of `ContributorsDoesNotExist`

`_meta` = `<peewee.Metadata object>`

`_schema` = `<peewee.SchemaManager object>`

`citations`

`created` = `<ExtendDateTimeField: Contributors.created>`

`deleted` = `<ExtendDateTimeField: Contributors.deleted>`

`dept_code` = `<CharField: Contributors.dept_code>`

`encoding` = `<CharField: Contributors.encoding>`

`first_name` = `<CharField: Contributors.first_name>`

`from_hash` (*obj*)

Convert the hash into the object fields.

`id` = `<AutoField: Contributors.id>`

`institution` = `<ForeignKeyField: Contributors.institution>`

`institution_id` = `<ForeignKeyField: Contributors.institution>`

`last_name` = `<CharField: Contributors.last_name>`

`middle_initial` = `<CharField: Contributors.middle_initial>`

`to_hash` (***flags*)

Convert the object fields into a serializable hash.

`updated` = `<ExtendDateTimeField: Contributors.updated>`

`user` = `<ForeignKeyField: Contributors.user>`

`user_id` = `<ForeignKeyField: Contributors.user>`

`classmethod where_clause` (*kwargs*)

Generate the PeeWee where clause used in searching.

5.3.15 DOI Authors Python Module

Secondary author list for DOI entries.

```
class pacifica.metadata.orm.doi_authors.DOIAuthors (*args, **kwargs)
    DOI Authors Model.
```

Attributes:

Name	Description
last_name	Author last name
first_name	Author first name
email	Author email address
affiliation	Institutional affiliation
orcid	Author's ORCID ID

DoesNotExist

alias of DOIAuthorsDoesNotExist

`_meta = <peewee.Metadata object>`

`_schema = <peewee.SchemaManager object>`

`affiliation = <CharField: DOIAuthors.affiliation>`

`created = <ExtendDateTimeField: DOIAuthors.created>`

`deleted = <ExtendDateTimeField: DOIAuthors.deleted>`

`doi_authorships`

`email = <CharField: DOIAuthors.email>`

`first_name = <CharField: DOIAuthors.first_name>`

`from_hash(obj)`

Convert the hash to the object.

`id = <AutoField: DOIAuthors.id>`

`last_name = <CharField: DOIAuthors.last_name>`

`orcid = <CharField: DOIAuthors.orcid>`

`to_hash(**flags)`

Convert the object to a hash.

`updated = <ExtendDateTimeField: DOIAuthors.updated>`

`classmethod where_clause(kwargs)`

Where clause for the various elements.

5.3.16 DOI Author Mapping Python Module

Authors linked to DOI's.

```
class pacifica.metadata.orm.doi_author_mapping.DOIAuthorMapping(*args,
                                                                **kwargs)
```

DOI Author Mapping Model.

Attributes:

Name	Description
author	ID from DOI_authors table
doi	Full DOI Specifier
author_order	where does this author go in the order?

```
DoesNotExist
    alias of DOIAuthorMappingDoesNotExist

_meta = <peewee.Metadata object>

_schema = <peewee.SchemaManager object>

author = <ForeignKeyField: DOIAuthorMapping.author>

author_id = <ForeignKeyField: DOIAuthorMapping.author>

author_order = <IntegerField: DOIAuthorMapping.author_order>

created = <ExtendDateTimeField: DOIAuthorMapping.created>

deleted = <ExtendDateTimeField: DOIAuthorMapping.deleted>

doi = <ForeignKeyField: DOIAuthorMapping.doi>

doi_id = <ForeignKeyField: DOIAuthorMapping.doi>

from_hash (obj)
    Convert the hash to the object.

to_hash (**flags)
    Convert the object to a hash.

updated = <ExtendDateTimeField: DOIAuthorMapping.updated>

classmethod where_clause (kwargs)
    Where clause for the various elements.
```

5.3.17 DOI Entries Python Module

Keywords linked to citations.

```
class pacifica.metadata.orm.doi_entries.DOIEntries (*args, **kwargs)
    DOI Entries Model.
```

Attributes:

Name	Description
doi	full DOI specifier
status	Current publishing status
released	Has the data been released
site_url	Linked landing page url
creator	Link to Users table
encoding	encoding of the keyword

```
DoesNotExist
    alias of DOIEntriesDoesNotExist

_meta = <peewee.Metadata object>

_schema = <peewee.SchemaManager object>

authors

created = <ExtendDateTimeField: DOIEntries.created>

creator = <ForeignKeyField: DOIEntries.creator>

creator_id = <ForeignKeyField: DOIEntries.creator>
```



```

deleted = <ExtendDateTimeField: DOIEntries.deleted>
doi = <CharField: DOIEntries.doi>
doi_citations
encoding = <CharField: DOIEntries.encoding>
from_hash(obj)
    Convert the hash to the object.
metadata
released = <BooleanField: DOIEntries.released>
site_url = <CharField: DOIEntries.site_url>
status = <CharField: DOIEntries.status>
to_hash(**flags)
    Convert the object to a hash.
transactions
updated = <ExtendDateTimeField: DOIEntries.updated>
classmethod where_clause(kwargs)
    Where clause for the various elements.

```

5.3.18 DOI Info Python Module

DOIInfo stores return info from the minting service about the DOI entry.

```

class pacifica.metadata.orm.doi_info.DOIInfo(*args, **kwargs)
    DOI Info keys and values for return info from minting service.

```

Attributes:

Name	Description
doi	Link to the DOIEntries model
key	Key name
value	Value

```

DoesNotExist
    alias of DOIInfoDoesNotExist
_meta = <peewee.Metadata object>
_schema = <peewee.SchemaManager object>
created = <ExtendDateTimeField: DOIInfo.created>
deleted = <ExtendDateTimeField: DOIInfo.deleted>
doi = <ForeignKeyField: DOIInfo.doi>
doi_id = <ForeignKeyField: DOIInfo.doi>
from_hash(obj)
    Convert the hash into the object.
key = <CharField: DOIInfo.key>

```

```
to_hash (**flags)
    Convert the object to a hash.

updated = <ExtendDateTimeField: DOIInfo.updated>

value = <CharField: DOIInfo.value>

classmethod where_clause (kwargs)
    Where clause for the various elements.
```

5.3.19 DOI Transaction Python Module

DOI transaction relationship.

```
class pacifica.metadata.orm.doi_transaction.DOITransaction (*args, **kwargs)
    Relates DOI entries with transaction release entries.
```

Attributes:

Name	Description
doi	Link to the DOI model
transaction	Link to the TransactionRelease model

```
DoesNotExist
    alias of DOITransactionDoesNotExist

_meta = <peewee.Metadata object>

_schema = <peewee.SchemaManager object>

created = <ExtendDateTimeField: DOITransaction.created>

deleted = <ExtendDateTimeField: DOITransaction.deleted>

doi = <ForeignKeyField: DOITransaction.doi>

doi_id = <ForeignKeyField: DOITransaction.doi>

from_hash (obj)
    Convert the hash into the object.

to_hash (**flags)
    Convert the object to a hash.

transaction = <ForeignKeyField: DOITransaction.transaction>

transaction_id = <ForeignKeyField: DOITransaction.transaction>

updated = <ExtendDateTimeField: DOITransaction.updated>

classmethod where_clause (kwargs)
    Where clause for the various elements.
```

5.3.20 Files Python Module

Contains the Files object model primary unit of metadata for Pacifica.

```
class pacifica.metadata.orm.files.Files (*args, **kwargs)
    Files metadata.

    This object contains various attributes describing a file and where it came from.
```

Attributes:**DoesNotExist**

alias of FilesDoesNotExist

_meta = <peewee.Metadata object>**_schema** = <peewee.SchemaManager object>**classmethod** **_where_date_clause** (*where_clause, kwargs*)**created** = <ExtendDateTimeField: Files.created>**ctime** = <ExtendDateTimeField: Files.ctime>**deleted** = <ExtendDateTimeField: Files.deleted>**encoding** = <CharField: Files.encoding>**from_hash** (*obj*)

Convert the hash to an object.

hashsum = <CharField: Files.hashsum>**hashtype** = <CharField: Files.hashtype>**id** = <AutoField: Files.id>**metadata****mimetype** = <CharField: Files.mimetype>**mtime** = <ExtendDateTimeField: Files.mtime>**name** = <CharField: Files.name>**size** = <BigIntegerField: Files.size>**subdir** = <CharField: Files.subdir>**suspense_date** = <ExtendDateField: Files.suspense_date>**to_hash** (***flags*)

Convert the object to a hash.

transaction = <ForeignKeyField: Files.transaction>**transaction_id** = <ForeignKeyField: Files.transaction>**updated** = <ExtendDateTimeField: Files.updated>**classmethod** **where_clause** (*kwargs*)

PeeWee specific where expression.

5.3.21 File Key Value Python Module

FileKeyValue links Files and Keys and Values objects.

class `pacifica.metadata.orm.file_key_value.FileKeyValue` (**args, **kwargs*)

FileKeyValue attributes are foreign keys.

Attributes:

Name	Description
file	Link to the File model
key	Link to the Key model
value	Link to the Value model

DoesNotExist

alias of FileKeyValueDoesNotExist

```
_meta = <peewee.Metadata object>
_schema = <peewee.SchemaManager object>
created = <ExtendDateTimeField: FileKeyValue.created>
deleted = <ExtendDateTimeField: FileKeyValue.deleted>
file = <ForeignKeyField: FileKeyValue.file>
file_id = <ForeignKeyField: FileKeyValue.file>
from_hash(obj)
    Convert the hash into the object.
key = <ForeignKeyField: FileKeyValue.key>
key_id = <ForeignKeyField: FileKeyValue.key>
to_hash(**flags)
    Convert the object to a hash.
updated = <ExtendDateTimeField: FileKeyValue.updated>
value = <ForeignKeyField: FileKeyValue.value>
value_id = <ForeignKeyField: FileKeyValue.value>
classmethod where_clause(kwargs)
    Where clause for the various elements.
```

5.3.22 Groups Python Module

Contains model for groups.

```
class pacifica.metadata.orm.groups.Groups(*args, **kwargs)
    Groups model and associated fields.
```

Attributes:

Name	Description
name	name of the group
is_admin	does the group has admin abilities
encoding	encoding for the group name

DoesNotExist

alias of GroupsDoesNotExist

```
_meta = <peewee.Metadata object>
_schema = <peewee.SchemaManager object>
created = <ExtendDateTimeField: Groups.created>
```

```

deleted = <ExtendDateTimeField: Groups.deleted>
encoding = <CharField: Groups.encoding>
from_hash(obj)
    Convert the hash into the object.
id = <AutoField: Groups.id>
instrument_members
is_admin = <BooleanField: Groups.is_admin>
members
name = <CharField: Groups.name>
projects
to_hash(**flags)
    Convert the object to a hash.
updated = <ExtendDateTimeField: Groups.updated>
classmethod where_clause(kwargs)
    PeeWee specific where clause used for search.

```

5.3.23 Institutions Python Module

Describes an institution and its attributes.

```

class pacifica.metadata.orm.institutions.Institutions(*args, **kwargs)
    Institution model scribes an institute.

```

Attributes:

Name	Description
name	Name of the institution
association_cd	Type of institution (TBD)
is_foreign	Is the institution foreign or not
encoding	Any encoding for the name

```

DoesNotExist
    alias of InstitutionsDoesNotExist
_meta = <peewee.Metadata object>
_schema = <peewee.SchemaManager object>
association_cd = <CharField: Institutions.association_cd>
contributors
created = <ExtendDateTimeField: Institutions.created>
deleted = <ExtendDateTimeField: Institutions.deleted>
encoding = <CharField: Institutions.encoding>
from_hash(obj)
    Convert the hash into the object.
id = <AutoField: Institutions.id>

```

```
is_foreign = <BooleanField: Institutions.is_foreign>
name = <TextField: Institutions.name>
to_hash(*flags)
    Convert the object to a hash.
updated = <ExtendDateTimeField: Institutions.updated>
users
classmethod where_clause(kwargs)
    PeeWee specific where clause used for search.
```

5.3.24 Institution Person Python Module

5.3.25 Instruments Python Module

Instrument model describing data generators.

```
class pacifica.metadata.orm.instruments.Instruments(*args, **kwargs)
    Instrument and associated fields.
```

Attributes:

Name	Description
display_name	Long display string for web sites
name	Machine parsable display name
name_short	Short version used in lists
active	whether the instrument is active
encoding	encoding for the various name attrs

DoesNotExist

alias of InstrumentsDoesNotExist

```
_meta = <peewee.Metadata object>
_schema = <peewee.SchemaManager object>
active = <BooleanField: Instruments.active>
created = <ExtendDateTimeField: Instruments.created>
custodians
data_sources
deleted = <ExtendDateTimeField: Instruments.deleted>
display_name = <CharField: Instruments.display_name>
encoding = <CharField: Instruments.encoding>
from_hash(obj)
    Convert the hash into the object.
groups
id = <AutoField: Instruments.id>
metadata
name = <CharField: Instruments.name>
```

```

name_short = <CharField: Instruments.name_short>

projects

to_hash (**flags)
    Convert the object to a hash.

transsip

updated = <ExtendDateTimeField: Instruments.updated>

classmethod where_clause (kwargs)
    PeeWee specific where clause used for search.

```

5.3.26 Instrument Custodian Python Module

5.3.27 Instrument Group Python Module

InstrumentGroup links Groups and Instruments and objects.

```

class pacifica.metadata.orm.instrument_group.InstrumentGroup (*args, **kwargs)
    InstrumentGroup attributes are foreign keys.

```

Attributes:

Name	Description
instrument	Link to the Instrument model
group	Link to the Group model

```

DoesNotExist
    alias of InstrumentGroupDoesNotExist

_meta = <peewee.Metadata object>

_schema = <peewee.SchemaManager object>

created = <ExtendDateTimeField: InstrumentGroup.created>

deleted = <ExtendDateTimeField: InstrumentGroup.deleted>

from_hash (obj)
    Convert the hash into the object.

group = <ForeignKeyField: InstrumentGroup.group>

group_id = <ForeignKeyField: InstrumentGroup.group>

instrument = <ForeignKeyField: InstrumentGroup.instrument>

instrument_id = <ForeignKeyField: InstrumentGroup.instrument>

to_hash (**flags)
    Convert the object to a hash.

updated = <ExtendDateTimeField: InstrumentGroup.updated>

classmethod where_clause (kwargs)
    Where clause for the various elements.

```

5.3.28 Journals Python Module

Contains model for Journal.

class `pacifica.metadata.orm.journals.Journals(*args, **kwargs)`
Journal model and associated fields.

Attributes:

Name	Description
<code>name</code>	name of the journal
<code>author</code>	impact factor of the journal
<code>website_url</code>	website for the journal (optional)
<code>encoding</code>	language encoding for the name

DoesNotExist

alias of `JournalsDoesNotExist`

`_meta` = `<peewee.Metadata object>`

`_schema` = `<peewee.SchemaManager object>`

`citations`

`created` = `<ExtendDateTimeField: Journals.created>`

`deleted` = `<ExtendDateTimeField: Journals.deleted>`

`encoding` = `<CharField: Journals.encoding>`

`from_hash(obj)`

Convert the hash into the object.

`id` = `<AutoField: Journals.id>`

`impact_factor` = `<FloatField: Journals.impact_factor>`

`name` = `<CharField: Journals.name>`

`to_hash(**flags)`

Convert the object to a hash.

`updated` = `<ExtendDateTimeField: Journals.updated>`

`website_url` = `<CharField: Journals.website_url>`

classmethod `where_clause(kwargs)`

PeeWee specific where clause used for search.

5.3.29 Keys Python Module

Contains the model for metadata keys.

class `pacifica.metadata.orm.keys.Keys(*args, **kwargs)`
Keys model class for metadata.

Attributes:

Name	Description
<code>key</code>	generic metadata key
<code>encoding</code>	encoding for the key


```

DoesNotExist
    alias of KeysDoesNotExist

    _meta = <peewee.Metadata object>
    _schema = <peewee.SchemaManager object>
    created = <ExtendDateTimeField: Keys.created>
    deleted = <ExtendDateTimeField: Keys.deleted>
    encoding = <CharField: Keys.encoding>
    file_links
    from_hash(obj)
        Convert the hash to the object.
    id = <AutoField: Keys.id>
    instrument_links
    key = <CharField: Keys.key>
    to_hash(**flags)
        Convert the object to a hash.
    trans_links
    updated = <ExtendDateTimeField: Keys.updated>
    classmethod where_clause(kwargs)
        PeeWee specific where clause used for search.

```

5.3.30 Keywords Python Module

Keywords linked to citations.

```

class pacifica.metadata.orm.keywords.Keywords(*args, **kwargs)
    Keywords Model.

```

Attributes:

Name	Description
citation	Link to the Citation model
keyword	keyword in the citation
encoding	encoding of the keyword

```

DoesNotExist
    alias of KeywordsDoesNotExist

    _meta = <peewee.Metadata object>
    _schema = <peewee.SchemaManager object>
    citations
    created = <ExtendDateTimeField: Keywords.created>
    deleted = <ExtendDateTimeField: Keywords.deleted>
    encoding = <CharField: Keywords.encoding>

```

```
from_hash (obj)  
    Convert the hash to the object.  
  
id = <AutoField: Keywords.id>  
  
keyword = <CharField: Keywords.keyword>  
  
to_hash (**flags)  
    Convert the object to a hash.  
  
updated = <ExtendDateTimeField: Keywords.updated>  
  
classmethod where_clause (kwargs)  
    Where clause for the various elements.
```

5.3.31 Projects Python Module

Projects data model.

```
class pacifica.metadata.orm.projects.Projects (*args, **kwargs)  
    Projects data model.
```

Attributes:

Name	Description
title	Title of the project
abstract	Long abstract of the project
science_theme	science group or theme assigned to
project_type	kind or type of project
submitted_date	date project entered the system
accepted_date	date project was accepted
actual_start_date	date the project was started
actual_end_date	date the project was ended
closed_date	date the project was terminated
suspense_date	date the project is made available
encoding	encoding of the other text attrs

```
DoesNotExist  
    alias of ProjectsDoesNotExist  
  
_meta = <peewee.Metadata object>  
  
_schema = <peewee.SchemaManager object>  
  
classmethod _where_date_clause (where_clause, kwargs)  
  
classmethod _where_datetime_clause (where_clause, kwargs)  
  
abstract = <TextField: Projects.abstract>  
  
accepted_date = <ExtendDateField: Projects.accepted_date>  
  
actual_end_date = <ExtendDateField: Projects.actual_end_date>  
  
actual_start_date = <ExtendDateField: Projects.actual_start_date>  
  
atools  
  
citations  
  
closed_date = <ExtendDateField: Projects.closed_date>
```

```

created = <ExtendDateTimeField:  Projects.created>
deleted = <ExtendDateTimeField:  Projects.deleted>
encoding = <CharField:  Projects.encoding>
from_hash(obj)
    Convert the hash to the object.

groups

id = <CharField:  Projects.id>
instruments

project_type = <CharField:  Projects.project_type>
science_theme = <CharField:  Projects.science_theme>
short_name = <CharField:  Projects.short_name>
submitted_date = <ExtendDateTimeField:  Projects.submitted_date>
suspense_date = <ExtendDateField:  Projects.suspense_date>
title = <TextField:  Projects.title>
to_hash(**flags)
    Convert the object to a hash.

transsap

transsip

updated = <ExtendDateTimeField:  Projects.updated>
users

classmethod where_clause(kwargs)
    PeeWee specific where clause used for search.

```

5.3.32 Project Group Python Module

Project group relationship.

```

class pacifica.metadata.orm.project_group.ProjectGroup(*args, **kwargs)
    Relates projects and groups objects.

```

Attributes:

Name	Description
group	Link to the Group model
project	Link to the Project model

```

DoesNotExist
    alias of ProjectGroupDoesNotExist

_meta = <peewee.Metadata object>
_schema = <peewee.SchemaManager object>

created = <ExtendDateTimeField:  ProjectGroup.created>
deleted = <ExtendDateTimeField:  ProjectGroup.deleted>

```

```
from_hash(obj)
    Convert the hash into the object.

group = <ForeignKeyField: ProjectGroup.group>
group_id = <ForeignKeyField: ProjectGroup.group>
project = <ForeignKeyField: ProjectGroup.project>
project_id = <ForeignKeyField: ProjectGroup.project>
to_hash(**flags)
    Convert the object to a hash.

updated = <ExtendDateTimeField: ProjectGroup.updated>

classmethod where_clause(kwargs)
    Where clause for the various elements.
```

5.3.33 Project Instrument Python Module

Project instrument relationship.

```
class pacifica.metadata.orm.project_instrument.ProjectInstrument(*args,
                                                                **kwargs)
```

Relates projects and instrument objects.

Attributes:

Name	Description
instrument	Link to the Instrument model
relationship	Link to the Relationship model
project	Link to the Project model

DoesNotExist

alias of ProjectInstrumentDoesNotExist

```
_meta = <peewee.Metadata object>
_schema = <peewee.SchemaManager object>
created = <ExtendDateTimeField: ProjectInstrument.created>
deleted = <ExtendDateTimeField: ProjectInstrument.deleted>
from_hash(obj)
    Convert the hash into the object.

instrument = <ForeignKeyField: ProjectInstrument.instrument>
instrument_id = <ForeignKeyField: ProjectInstrument.instrument>
project = <ForeignKeyField: ProjectInstrument.project>
project_id = <ForeignKeyField: ProjectInstrument.project>
relationship = <ForeignKeyField: ProjectInstrument.relationship>
relationship_id = <ForeignKeyField: ProjectInstrument.relationship>
to_hash(**flags)
    Convert the object to a hash.

updated = <ExtendDateTimeField: ProjectInstrument.updated>
```

```
uuid = <UUIDField: ProjectInstrument.uuid>
```

```
classmethod where_clause (kwargs)
    Where clause for the various elements.
```

5.3.34 Project Participant Python Module

5.3.35 Transactions Python Module

Transactions model.

```
class pacifica.metadata.orm.transactions.Transactions (*args, **kwargs)
    Transactions model class.
```

Attributes:

Name	Description
description	Description of the transaction
suspense_date	date the transaction is available

DoesNotExist

alias of TransactionsDoesNotExist

```
_meta = <peewee.Metadata object>
```

```
_schema = <peewee.SchemaManager object>
```

```
classmethod _where_date_clause (where_clause, kwargs)
```

atools

```
created = <ExtendDateTimeField: Transactions.created>
```

```
deleted = <ExtendDateTimeField: Transactions.deleted>
```

```
description = <TextField: Transactions.description>
```

files

```
from_hash (obj)
```

Convert the hash into the object.

```
id = <AutoField: Transactions.id>
```

metadata

```
suspense_date = <ExtendDateField: Transactions.suspense_date>
```

```
to_hash (**flags)
```

Convert the object to a hash.

transsap

transsip

```
updated = <ExtendDateTimeField: Transactions.updated>
```

users

```
classmethod where_clause (kwargs)
```

Where clause for the various elements.

5.3.36 Transaction Release Python Module

5.3.37 Transaction, Submitter, Analytical Tool, Project Python Module

TransSAP model.

```
class pacifica.metadata.orm.transsap.TransSAP (*args, **kwargs)
    TransSAP model class.
```

Attributes:

Name	Description
submitter	User who submitted the transaction
analytical_tool	Analytical tool the transaction came from
project	Project the transaction is for
suspense_date	date the transaction is available

DoesNotExist

alias of TransSAPDoesNotExist

_meta = <peewee.Metadata object>

_schema = <peewee.SchemaManager object>

analytical_tool = <ForeignKeyField: TransSAP.analytical_tool>

analytical_tool_id = <ForeignKeyField: TransSAP.analytical_tool>

created = <ExtendDateTimeField: TransSAP.created>

deleted = <ExtendDateTimeField: TransSAP.deleted>

from_hash (*obj*)

Convert the hash into the object.

id = <ForeignKeyField: TransSAP.id>

id_id = <ForeignKeyField: TransSAP.id>

project = <ForeignKeyField: TransSAP.project>

project_id = <ForeignKeyField: TransSAP.project>

submitter = <ForeignKeyField: TransSAP.submitter>

submitter_id = <ForeignKeyField: TransSAP.submitter>

to_hash (***flags*)

Convert the object to a hash.

updated = <ExtendDateTimeField: TransSAP.updated>

classmethod where_clause (*kwargs*)

Where clause for the various elements.

5.3.38 Transaction, Submitter, Instrument, Project Python Module

TransSIP model.

```
class pacifica.metadata.orm.transsip.TransSIP (*args, **kwargs)
    TransSIP model class.
```

Attributes:

Name	Description
submitter	User who submitted the transaction
instrument	Instrument the transaction came from
project	Project the transaction is for
suspense_date	date the transaction is available

DoesNotExist

alias of TransSIPDoesNotExist

_meta = <peewee.Metadata object>

_schema = <peewee.SchemaManager object>

created = <ExtendDateTimeField: TransSIP.created>

deleted = <ExtendDateTimeField: TransSIP.deleted>

from_hash (*obj*)

Convert the hash into the object.

id = <ForeignKeyField: TransSIP.id>

id_id = <ForeignKeyField: TransSIP.id>

instrument = <ForeignKeyField: TransSIP.instrument>

instrument_id = <ForeignKeyField: TransSIP.instrument>

project = <ForeignKeyField: TransSIP.project>

project_id = <ForeignKeyField: TransSIP.project>

submitter = <ForeignKeyField: TransSIP.submitter>

submitter_id = <ForeignKeyField: TransSIP.submitter>

to_hash (***flags*)

Convert the object to a hash.

updated = <ExtendDateTimeField: TransSIP.updated>

classmethod where_clause (*kwargs*)

Where clause for the various elements.

5.3.39 Transaction Key Value Python Module

TransactionKeyValue links Transactions and Keys and Values objects.

class pacifica.metadata.orm.trans_key_value.**TransactionKeyValue** (**args*,
***kwargs*)

TransactionKeyValue attributes are foreign keys.

Attributes:

Name	Description
transaction	Link to the Transactions model
key	Link to the Keys model
value	Link to the Values model

```
DoesNotExist
    alias of TransactionKeyValueDoesNotExist

_meta = <peewee.Metadata object>

_schema = <peewee.SchemaManager object>

created = <ExtendDateTimeField: TransactionKeyValue.created>
deleted = <ExtendDateTimeField: TransactionKeyValue.deleted>

from_hash(obj)
    Convert the hash into the object.

key = <ForeignKeyField: TransactionKeyValue.key>
key_id = <ForeignKeyField: TransactionKeyValue.key>

to_hash(**flags)
    Convert the object to a hash.

transaction = <ForeignKeyField: TransactionKeyValue.transaction>
transaction_id = <ForeignKeyField: TransactionKeyValue.transaction>

updated = <ExtendDateTimeField: TransactionKeyValue.updated>
value = <ForeignKeyField: TransactionKeyValue.value>
value_id = <ForeignKeyField: TransactionKeyValue.value>

classmethod where_clause(kwargs)
    Where clause for the various elements.
```

5.3.40 Users Python Module

Users data model.

```
class pacifica.metadata.orm.users.Users(*args, **kwargs)
    Users data model object.
```

Attributes:

Name	Description
first_name	first name of the user/person
middle_initial	middle initial of the user/person
last_name	last name of the user/person
network_id	computer account of the user/person
email_address	user/person email address
encoding	encoding for the other attrs

```
DoesNotExist
    alias of UsersDoesNotExist

_meta = <peewee.Metadata object>

_schema = <peewee.SchemaManager object>

contributions

created = <ExtendDateTimeField: Users.created>
deleted = <ExtendDateTimeField: Users.deleted>
```



```

dois_created
email_address = <CharField: Users.email_address>
encoding = <CharField: Users.encoding>
first_name = <CharField: Users.first_name>
from_hash (obj)
    Convert the hash into the object.
groups
id = <AutoField: Users.id>
institutions
instruments
last_name = <CharField: Users.last_name>
middle_initial = <CharField: Users.middle_initial>
network_id = <CharField: Users.network_id>
projects
to_hash (**flags)
    Convert the object to a hash.
transactions
transsap
transsip
updated = <ExtendDateTimeField: Users.updated>
classmethod where_clause (kwargs)
    Where clause for the various elements.

```

5.3.41 User Group Python Module

UserGroup links Groups and Users and objects.

```
class pacifica.metadata.orm.user_group.UserGroup (*args, **kwargs)
    UserGroup attributes are foreign keys.
```

Attributes:

Name	Description
person	Link to the Users model
group	Link to the Groups model

```

DoesNotExist
    alias of UserGroupDoesNotExist
_meta = <peewee.Metadata object>
_schema = <peewee.SchemaManager object>
created = <ExtendDateTimeField: UserGroup.created>
deleted = <ExtendDateTimeField: UserGroup.deleted>

```

```
from_hash (obj)  
    Convert the hash into the object.  
  
group = <ForeignKeyField:  UserGroup.group>  
group_id = <ForeignKeyField:  UserGroup.group>  
person = <ForeignKeyField:  UserGroup.person>  
person_id = <ForeignKeyField:  UserGroup.person>  
  
to_hash (**flags)  
    Convert the object to a hash.  
  
updated = <ExtendDateTimeField:  UserGroup.updated>  
  
classmethod where_clause (kwargs)  
    Where clause for the various elements.
```

5.3.42 Utils Python Module

Utilities for common metadata tools.

```
class pacifica.metadata.orm.utils.ExtendDateField (formats=None, *args, **kwargs)  
    Appends to the DateField to add isoformatted date.  
  
    isoformat ()  
        Return the isoformat date field.  
  
class pacifica.metadata.orm.utils.ExtendDateTimeField (formats=None, *args, **kwargs)  
    Appends to the DateTimeField to add isoformat from datetime object.  
  
    isoformat ()  
        Return the isoformat datetime field.  
  
class pacifica.metadata.orm.utils.UUIDEncoder (*, skipkeys=False, ensure_ascii=True, check_circular=True, allow_nan=True, sort_keys=False, indent=None, separators=None, default=None)  
    UUID Encoder to JSON.  
  
    default (o)  
        Encode the UUID by returning it's hex value.  
  
pacifica.metadata.orm.utils.date_converts (date_obj)  
    Standardize on converting to date objects.  
  
pacifica.metadata.orm.utils.datetime_converts (time_obj)  
    Standardize on converting to datetime objects.  
  
pacifica.metadata.orm.utils.datetime_now_nomicrosecond ()  
    Return now with no microseconds.  
  
pacifica.metadata.orm.utils.index_hash (*args)  
    Generate a hash for all the arguments passed.  
  
    This is used to combine multiple unique IDs into a single string.
```

5.3.43 Values Python Module

Contains the model for metadata values.

class `pacifica.metadata.orm.values.Values(*args, **kwargs)`
 Values model class for metadata.

Attributes:

Name	Description
value	generic value for some metadata
encoding	language encoding of the value

DoesNotExist

alias of ValuesDoesNotExist

_meta = <peewee.Metadata object>

_schema = <peewee.SchemaManager object>

created = <ExtendDateTimeField: Values.created>

deleted = <ExtendDateTimeField: Values.deleted>

encoding = <CharField: Values.encoding>

file_links

from_hash(obj)

Convert the hash to the object.

id = <AutoField: Values.id>

instrument_links

to_hash(**flags)

Convert the object to a hash.

trans_links

updated = <ExtendDateTimeField: Values.updated>

value = <CharField: Values.value>

classmethod where_clause(kwargs)

PeeWee specific where clause used for search.

Core ORM Module.

5.4 REST Python Module

5.4.1 DOI Queries Python Module

DOI Modified Time Update Python Module

CherryPy DOI Registration Updater object class.

class `pacifica.metadata.rest.doi_queries.doi_modified_time_update.DOIModifiedTimeUpdate`
 Updates DOI Entries with new mod times.

```
static POST()  
    Update existing DOI Entries.  
  
static _update_modification_times (doi_list)  
    Touch a list of DOI Entries to force a modification time update.  
  
exposed = True
```

DOI Registration Base Python Module

CherryPy DOI Registration Updater object class.

```
class pacifica.metadata.rest.doi_queries.doi_registration_base.DOIRegistrationBase  
    Base class for DOI registration functionality.  
  
    static _check_doi_info_for_change (item_to_check, value)  
  
    static _update_doi_metadata_info (doi_info, doi_string)  
  
    static change_doi_entry_info (doi_string, doi_info, status='pending', released=False)  
        Update or create DOI entries.  
  
    static make_doi_entry_info (doi_string, doi_info, creator, status='pending', released=False)  
        Update or create DOI entries.
```

DOI Registration Entry Python Module

CherryPy DOI Registration Updater object class.

```
class pacifica.metadata.rest.doi_queries.doi_registration_entry.DOIRegistrationEntry  
    Updates the database with new DOI registration info from registration API.  
  
    static POST()  
        Upload and create new DOI Entries.  
  
    static _add_doi_record_entry (doi_info)  
  
    exposed = True
```

DOI Registration Update Python Module

CherryPy DOI Registration Updater object class.

```
class pacifica.metadata.rest.doi_queries.doi_registration_update.DOIRegistrationUpdate  
    Updates the database with new DOI registration info from registration API.  
  
    static POST()  
        Update existing DOI Entries.  
  
    static _check_for_doi_entry (doi_string)  
  
    static _clean_author_info (author_info)  
  
    static _extract_authors (creatorsblock_element, doi_string)  
  
    static _extract_doi_info_from_xml (record_object)  
  
    static _process_child_object (child_object)  
  
    static _process_updated_osti_info (osti_xml_string)  
        Access the server at OSTI and get all the relevant details for this DOI.
```

```
static _update_author_info (author_list, doi_string)
exposed = True
```

Rest module for the DOI queries.

5.4.2 File Info Python Module

Earliest Latest Python Module

CherryPy File Details object class.

```
class pacifica.metadata.rest.fileinfo_queries.earliest_latest.EarliestLatestFiles
    Retrieves earliest and latest file entries for a set of metadata specifiers.

    static POST (item_type, time_basis)
        Return file details for the list of file id's.

    static _get_earliest_latest (item_type, item_list, time_basis)

    exposed = True
```

Files With Tkv Python Module

CherryPy File Details object class.

```
class pacifica.metadata.rest.fileinfo_queries.files_with_tkv.FilesWithTransactionKeyValue
    Retrieves file details for a list of files having a certain key/value combo.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.

    static _get_files_for_kv_pair (key, value)

    exposed = True
```

File Details Python Module

CherryPy File Details object class.

```
class pacifica.metadata.rest.fileinfo_queries.file_details.FileDetailsLookup
    Retrieves file details for a list of file id's.

    static POST ()
        Return file details for the list of file id's.

    static _get_file_details (file_list)

    exposed = True
```

Rest module for the FileInfo queries.

5.4.3 Instrument Queries Python Module

Instrument Categories Python Module

CherryPy Metadata Instrument Categories Class.

```
class pacifica.metadata.rest.instrument_queries.instrument_categories.InstrumentCategories
    Calculates a set of instrument categories from the display names of EUS instruments.

    static GET()
        CherryPy GET method.

    exposed = True

    static get_instrument_categories()
        Pull the full list of instrument categories from the DB.
```

Instrument Lookup Python Module

CherryPy Status Metadata object class.

```
class pacifica.metadata.rest.instrument_queries.instrument_lookup.InstrumentLookup
    Retrieves a set of projects for a given keyword set.

    static GET(instrument_id=None)
        CherryPy GET method.

    static _get_instrument_details(instrument_id)
        Return a formatted dictionary containing the details of a given Instrument entry.

    exposed = True
```

Instrument Term Search Python Module

CherryPy Status Metadata object class.

```
class pacifica.metadata.rest.instrument_queries.instrument_term_search.InstrumentTermSearch
    InstrumentTermSearch API.

    static GET(search_term="")
        Return a set of instruments for a given user.

    exposed = True

    static search_for_instrument(search_term)
        Return a dictionary containing information about a given instrument.
```

Instrument User Search Python Module

CherryPy Status Metadata object class.

```
class pacifica.metadata.rest.instrument_queries.instrument_user_search.InstrumentUserSearch
    InstrumentUserSearch API.

    static GET(*args, **kwargs)
        Wrapper to connect and close connection to database.

    exposed = True

    static get_instruments_for_user(*args, **kwargs)
        Wrapper to check for user existence.
```

Query Base Python Module

CherryPy Status Metadata projectinfo base class.

```
class pacifica.metadata.rest.instrument_queries.query_base.QueryBase
    Retrieves a set of instruments for a given keyword set.

    static format_instrument_block (instrument_entry)
        Construct a dictionary from a given instrument instance in the metadata stack.

    static instrument_help_block_message ()
        Assemble a block of relevant help text to be returned with an invalid request.
```

Rest module for the InstrumentInfo queries.

5.4.4 Migration Queries Python Module

Migrate Instruments Python Module

CherryPy Metadata Migration Class for Instrument Entities.

```
class pacifica.metadata.rest.migration_queries.migrate_instruments.MigrateInstruments
    Generate a streamlined query for importing instrument entities and linkages.

    static GET ()
        CherryPy GET Method.

    exposed = True

    static generate_instrument_list ()
        Generate instrument objects with linkages.
```

Migrate Projects Python Module

CherryPy Metadata Migration Class for Instrument Entities.

```
class pacifica.metadata.rest.migration_queries.migrate_projects.MigrateProjects
    Generate a streamlined query for importing project entities and linkages.

    static GET ()
        CherryPy GET Method.

    exposed = True

    static generate_project_list ()
        Generate project objects with linkages.
```

Migrate Users Python Module

CherryPy Metadata Migration Class for User Entities.

```
class pacifica.metadata.rest.migration_queries.migrate_users.MigrateUsers
    Generate a streamlined query for importing instrument entities and linkages.

    static GET ()
        CherryPy GET Method.

    exposed = True
```

```
static generate_user_list ()
    Generate user objects with linkages.
```

Rest module for the FileInfo queries.

5.4.5 Project Queries Python Module

Project Has Data Python Module

CherryPy Status Metadata object class.

```
class pacifica.metadata.rest.project_queries.project_has_data.ProjectHasData
    Does the project have data for instruments.

    static POST (*args, **kwargs)
        Wrapper to connect and close connection to database.

    exposed = True
```

Project Lookup Python Module

CherryPy Status Metadata object class.

```
class pacifica.metadata.rest.project_queries.project_lookup.ProjectLookup
    Retrieves a set of projects for a given keyword set.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.

    static _get_project_details (project_id)
        Return a formatted dictionary containing the details of a given Project entry.

    exposed = True
```

Project Term Search Python Module

CherryPy Status Metadata object class.

```
class pacifica.metadata.rest.project_queries.project_term_search.ProjectTermSearch
    ProjectTermSearch API.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.

    exposed = True

    static search_for_project (search_term)
        Return a dictionary containing information about a given project.
```

Project User Search Python Module

CherryPy Status Metadata object class.

```
class pacifica.metadata.rest.project_queries.project_user_search.ProjectUserSearch
    ProjectUserSearch API.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.
```



```

exposed = True

static get_projects_for_user (*args, **kwargs)
    Wrapper to check for user existence.

```

Query Base Python Module

CherryPy Status Metadata projectinfo base class.

```

class pacifica.metadata.rest.project_queries.query_base.QueryBase
    Retrieves a set of projects for a given keyword set.

    static format_project_block (project_entry, instruments=None)
        Construct a dictionary from a given project instance in the metadata stack.

    static project_help_block_message ()
        Assemble a block of relevant help text to be returned with an invalid request.

```

Rest module for the ProjectInfo queries.

5.4.6 Reporting Query Python Module

Detailed Transactions List Python Module

CherryPy Status Metadata object class.

```

class pacifica.metadata.rest.reporting_queries.detailed_transactions_list.DetailedTransactionsList
    Retrieves a list of all transactions matching the search criteria.

    static POST (*args, **kwargs)
        Wrapper to connect and close connection to database.

    exposed = True

    static get_transaction_list_details (transaction_list)
        Return complete data set on a specified transaction.

```

Query Base Python Module

CherryPy Status Metadata projectinfo base class.

```

class pacifica.metadata.rest.reporting_queries.query_base.QueryBase
    Formats summary data for other classes down the tree.

    local_timezone = <DstTzInfo 'America/Los_Angeles' LMT-1 day, 16:07:00 STD>

    object_type_mappings = {'instrument': 'instrument', 'project': 'project', 'user': 'user'}

    time_basis_mappings = {'created': 'ctime', 'modified': 'mtime', 'submitted': 'update_time'}

```

Summarize By Date Python Module

CherryPy Status Metadata object class.

```

class pacifica.metadata.rest.reporting_queries.summarize_by_date.SummarizeByDate
    Retrieves a list of all transactions matching the search criteria.

```

```

static POST (*args, **kwargs)
    Wrapper to connect and close connection to database.

static _canonicalize_dates (start_date, end_date)

static _search_by_dates (object_type, object_id_list, start_date, end_date, time_basis)

static _summarize_by_date (summary_block, item)

static _summarize_upload_stats (upload_stats_block, transaction_info)

static _update_transaction_info_block (info_block, item, t_info)

exposed = True

static local_to_utc (local_datetime_obj)
    Return a TZ corrected datetime object.

static utc_to_local (utc_datetime_obj)
    Return a TZ corrected datetime object.

```

Rest module for the ProjectInfo queries.

5.4.7 Transaction Key Value Queries Python Module

Key Values For Transaction Python Module

CherryPy File Details object class.

```

class pacifica.metadata.rest.tkvinf_queries.kvs_for_transaction.KVsForTransaction
    Retrieves a list of key/value pairs for a transaction_id.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.

    exposed = True

    static get_kv_pairs_for_transaction (transaction_id)
        Retrieve a list of key/value pairs for a transaction_id.

```

Values For Key Python Module

CherryPy File Details object class.

```

class pacifica.metadata.rest.tkvinf_queries.values_for_key.ValuesForKey
    Retrieves a list of values for a given key from the trans_key_value table.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.

    exposed = True

    static get_values_for_key (key, start_time, end_time)
        Retrieve all the tkv values for a given key item.

```

Rest module for the Transaction Key Value Info queries.

5.4.8 Transaction Key Value Upload Queries Python Module

Upload Entries Python Module

CherryPy TKV Metadata object class.

```
class pacifica.metadata.rest.tkvupload_queries.upload_entries.UploadEntries
    Uploads new transaction key/value pairs to Pacifica.

    static POST()
        Return file details for the list of file id's.

    static _get_id_list(names_list, model_obj, field_name)

    static _insert_kv_mappings(item, key_cache, value_cache, transaction_id)

    static _update_id_list(names_list, model_obj, field_name)

    static add_or_update(item_list)
        Add or update transacton key value items.

    exposed = True

    upload_keys_cache = {}
```

Rest module for the ProjectInfo queries.

5.4.9 Transaction Queries Python Module

File Lookup Python Module

CherryPy Status File Metadata object class.

```
class pacifica.metadata.rest.transaction_queries.file_lookup.FileLookup
    Retrieves file listing for an individual transaction.

    static GET(*args, **kwargs)
        Wrapper to connect and close connection to database.

    exposed = True
```

Query Base Python Module

CherryPy Status Metadata projectinfo base class.

```
class pacifica.metadata.rest.transaction_queries.query_base.QueryBase
    Retrieves a set of projects for a given keyword set.

    static _get_base_transaction_metadata(transaction_entry, option=None)

    static _get_file_key_values(file_entries)

    static _get_file_list(transaction_id)

    static _get_transaction_entries(transaction_list)

    static _get_transaction_info_block(transaction_id, option='details')

    static _get_transaction_info_blocks(transaction_list, option='details')

    static _get_transaction_key_values(transaction_id)
```

```
static _get_transaction_sizes (transaction_list)

static compose_help_block_message ()
    Assemble a block of relevant help text to be returned with an invalid request.

valid_keywords = ['project', 'project_id', 'instrument', 'instrument_id', 'requesting_
```

Transactions Multi Search Python Module

CherryPy Status Metadata object class.

```
class pacifica.metadata.rest.transaction_queries.transactions_multi_search.TransactionsMultiSearch
    Retrieves a list of all transactions matching the search criteria.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.

    static _check_keywords (kwargs)

    static _get_first_last_day ()

    static _get_instruments_from_group_id (group_id)

    static _get_transactions_from_group (instrument_group_id,    project_id,    start_time,
                                         end_time)

    exposed = True
```

Transaction Last Python Module

CherryPy Status Transaction Metadata object class.

```
class pacifica.metadata.rest.transaction_queries.transaction_last.TransactionLast
    Retrieves details for an individual transaction.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.

    static _get_last_known_transaction ()

    exposed = True
```

Transaction Lookup Python Module

CherryPy Status Transaction Metadata object class.

```
class pacifica.metadata.rest.transaction_queries.transaction_lookup.TransactionLookup
    Retrieves details for an individual transaction.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.

    exposed = True
```

Transaction Release State Python Module

CherryPy Status Transaction Metadata object class.

```
class pacifica.metadata.rest.transaction_queries.transaction_release_state.TransactionReleaseState
    Retrieves release state for an individual transaction (GET) or set of transactions (POST).
```

```

static GET (*args, **kwargs)
    Wrapper to connect and close connection to database.

static POST (*args, **kwargs)
    Wrapper to connect and close connection to database.

static _generate_missing_transactions (transaction_list, found_transactions)

static _get_citation_release (transaction_id)

static _get_doi_release (transaction_id)

static _get_release_info (transaction_list)

static _get_release_state (transaction_list)

exposed = True

```

Transaction Search Python Module

CherryPy Status Metadata object class.

```

class pacifica.metadata.rest.transaction_queries.transaction_search.TransactionSearch
    Retrieves a list of all transactions matching the search criteria.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.

    static _search_transactions (search_terms)

    exposed = True

```

Rest module for the ProjectInfo queries.

5.4.10 User Queries Python Module

Query Base Python Module

CherryPy Status Metadata projectinfo base class.

```

class pacifica.metadata.rest.user_queries.query_base.QueryBase
    Retrieves a set of projects for a given keyword set.

    static _is_admin_user (user_entry)

    static compose_help_block_message ()
        Assemble a block of relevant help text to be returned with an invalid request.

    static format_user_block (user_entry, option=None)
        Construct a dictionary from a given user instance in the metadata stack.

```

User Lookup Python Module

CherryPy Status Metadata object class.

```

class pacifica.metadata.rest.user_queries.user_lookup.UserLookup
    Retrieves detailed info for a given user.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.

```

```
exposed = True

static get_user_info_block (person_id, option=None)
    Return a formatted dictionary containing the details of a given user entry.
```

User Search Python Module

CherryPy Status Usersearch object class.

```
class pacifica.metadata.rest.user_queries.user_search.UserSearch
    Retrieves detailed info for a given user.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.

    exposed = True

    static search_for_user (search_term, option)
        Return a dictionary containing information about a given user.
```

Rest module for the ProjectInfo queries.

5.4.11 DOI Upload Python Module

Core interface to upload DOI registration info into metadata with CherryPy.

```
class pacifica.metadata.rest.doiupload.DOIUploadAPI
    InstrumentInfo API.

    __init__ ()
        Create local objects for subtree items.

    exposed = True
```

5.4.12 Fileinfo Python Module

Core interface for the fileinfo metadataobjects.

```
class pacifica.metadata.rest.fileinfo.FileInfoAPI
    FileInfoAPI.

    __init__ ()
        Create local objects for subtree items.

    exposed = True
```

5.4.13 Ingest Python Module

Core interface for the ingest of metadata objects.

Example uploaded data:

```
[
  {"destinationTable": "Transactions._id", "value": 1234},
  {"destinationTable": "Transactions.submitter", "value": 34002},
  {"destinationTable": "Transactions.project", "value": 34002},
  {"destinationTable": "Transactions.instrument", "value": 34002},
```

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```

{"destinationTable": "TransactionKeyValue", "key": "Tag", "value": "Blah"},
{"destinationTable": "TransactionKeyValue", "key": "Taggy", "value": "Blah"},
{"destinationTable": "TransactionKeyValue", "key": "Taggier", "value": "Blah"}
{
  "destinationTable": "Files",
  "_id": 34, "name": "foo.txt", "subdir": "a/b/",
  "ctime": "Tue Nov 29 14:09:05 PST 2016",
  "mtime": "Tue Nov 29 14:09:05 PST 2016",
  "size": 128, "mimetype": "text/plain"
},
{
  "destinationTable": "FileKeyValue",
  "key": "Micronic Adjustment",
  "value": "5.66%",
  "file_id": 34
},
{
  "destinationTable": "Files",
  "_id": 35, "name": "bar.txt", "subdir": "a/b/",
  "ctime": "Tue Nov 29 14:09:05 PST 2016",
  "mtime": "Tue Nov 29 14:09:05 PST 2016",
  "size": 47, "mimetype": "text/plain"
},
]

```

class pacifica.metadata.rest.ingest.IngestAPI

Uploader ingest API.

static PUT (*args, **kwargs)

Wrapper to connect and close connection to database.

exposed = True

static validate_file_meta (file_meta)

Validate the file metadata.

static validate_hash_data (hashtype, hashsum)

Validate the hashtype and hashsum are valid.

static validate_mime_type (mimetype)

Validate the mimetype string.

5.4.14 Instrumentinfo Python Module

Core interface for the projectinfo metadata objects to interface with CherryPy.

class pacifica.metadata.rest.instrumentinfo.InstrumentInfoAPI

InstrumentInfo API.

__init__ ()

Create local objects for subtree items.

exposed = True

5.4.15 Migrationinfo Python Module

Core interface for the projectinfo metadata objects to interface with CherryPy.

```
class pacifica.metadata.rest.migrationinfo.MigrationInfoAPI
    MigrationInfo API.

    __init__ ()
        Create local objects for subtree items.

    exposed = True
```

5.4.16 Objectinfo Python Module

Core interface for the uploader metadata objects to interface with CherryPy.

```
class pacifica.metadata.rest.objectinfo.ObjectInfoAPI
    ObjectInfoAPI API.

    static GET (*args, **kwargs)
        Wrapper to connect and close connection to database.

    exposed = True

    static get_class_object_from_name (object_class_name)
        Return a metadata model class for a given class name string.
```

5.4.17 Orm Python Module

Core interface for each ORM object to interface with CherryPy.

```
class pacifica.metadata.rest.orm.CherryPyAPI (*args, **kwargs)
    Core CherryPy interface for all orm objects.

    DELETE (**kwargs)
        Wrapper to connect and close connection to database.

    DoesNotExist
        alias of CherryPyAPIDoesNotExist

    GET (**kwargs)
        Wrapper to connect and close connection to database.

    POST (**kwargs)
        Wrapper to connect and close connection to database.

    PUT (**kwargs)
        Wrapper to connect and close connection to database.

    static _CherryPyAPI_fix_dates (orig_obj, db_obj)
        Fix the dates for insert.

    _delete (**kwargs)
        Internal delete object method.

    _force_delete (**kwargs)
        Force delete entries in the database.

    _insert (objs)
        Insert object from json into the system.

    classmethod _insert_many_format (obj_hashes)

    _meta = <peewee.Metadata object>

    _schema = <peewee.SchemaManager object>
```



```

    _select (**kwargs)
        Internal select method.

    _set_or_create (objs)
        Set or create the object if it doesn't already exist.

    static _set_recursion_depth (flags, kwargs)

    static _set_recursion_limit (flags, kwargs)

    _update (update_hash, **kwargs)
        Internal update method for an object.

    classmethod check_for_key_existence (object_list)
        Check for already loaded keys to prevent collisions.

    created = <ExtendDateTimeField:  CherryPyAPI.created>
    deleted = <ExtendDateTimeField:  CherryPyAPI.deleted>
    es_recursive_flags = {'recursion_depth':  1, 'recursion_exclude':  [], 'recursion_limit':  1000}
    exposed = True
    id = <AutoField:  CherryPyAPI.id>
    updated = <ExtendDateTimeField:  CherryPyAPI.updated>

pacifica.metadata.rest.orm._encode (value)

pacifica.metadata.rest.orm.json_handler (*args, **kwargs)
    JSON handler to encode the data value.

```

5.4.18 Projectinfo Python Module

Core interface for the projectinfo metadata objects to interface with CherryPy.

```

class pacifica.metadata.rest.projectinfo.ProjectInfoAPI
    ProjectInfo API.

    __init__ ()
        Create local objects for subtree items.

    exposed = True

```

5.4.19 Root Python Module

CherryPy root object class.

```

class pacifica.metadata.rest.root.Root
    CherryPy root object class.

    not exposed by default the base objects are exposed

    analytical_tools = <AnalyticalTools:  None>
    atool_project
    atool_transaction
    citation_contributor
    citation_doi

```

```
citation_keyword
citation_project
citation_transaction
citations = <Citations:  None>
contributors = <Contributors:  None>
data_sources = <DataSources:  eecfb39a-5be3-421b-afb5-34745e8350d2>
doi_author_mapping
doi_authors = <DOIAuthors:  None>
doi_entries = <DOIEntries:  None>
doi_info
doi_transaction
doiupload = <pacifica.metadata.rest.doiupload.DOIUploadAPI  object>
exposed = True
file_key_value
fileinfo = <pacifica.metadata.rest.fileinfo.FileInfoAPI  object>
files = <Files:  None>
groups = <Groups:  None>
ingest = <pacifica.metadata.rest.ingest.IngestAPI  object>
institution_user = <InstitutionUser:  449255a0-f5e3-41d6-9c62-4b22defb1e80>
institutions = <Institutions:  None>
instrument_data_source
instrument_group
instrument_key_value
instrument_user = <InstrumentUser:  a97af083-d1e7-44ff-b031-8c75b955b89f>
instrumentinfo = <pacifica.metadata.rest.instrumentinfo.InstrumentInfoAPI  object>
instruments = <Instruments:  None>
journals = <Journals:  None>
keys = <Keys:  None>
keywords = <Keywords:  None>
migrate = <pacifica.metadata.rest.migrationinfo.MigrationInfoAPI  object>
objectinfo = <pacifica.metadata.rest.objectinfo.ObjectInfoAPI  object>
project_group
project_instrument = <ProjectInstrument:  20c53213-12fa-4221-8f5f-b59617e0bd40>
project_user = <ProjectUser:  914a3e92-59c0-48b3-b8e7-bb1625433068>
projectinfo = <pacifica.metadata.rest.projectinfo.ProjectInfoAPI  object>
projects = <Projects:  None>
```

```

relationships = <Relationships:  a7a0f701-abda-4b93-ba6e-b14e6380ad8a>
summaryinfo = <pacifica.metadata.rest.summaryinfo.SummaryInfoAPI object>
tkvinfo = <pacifica.metadata.rest.tkvinfo.TkvInfoAPI object>
tkvupload = <pacifica.metadata.rest.tkvupload.TkvUploadAPI object>
trans_key_value
transaction_user = <TransactionUser:  8bbcc302-50ac-4b7d-8aca-9c83c23c7ffa>
transactioninfo = <pacifica.metadata.rest.transactioninfo.TransactionInfoAPI object>
transactions = <Transactions:  None>
transsap
transsip
user_group
userinfo = <pacifica.metadata.rest.userinfo.UserInfoAPI object>
users = <Users:  None>
values = <Values:  None>
pacifica.metadata.rest.root.error_page_default (**kwargs)
    The default error page should always enforce json.

```

5.4.20 Summaryinfo Python Module

Core interface for the summaryInfo metadata objects to interface with CherryPy.

```

class pacifica.metadata.rest.summaryinfo.SummaryInfoAPI
    SummaryInfo API.

    __init__()
        Create local objects for subtree items.

    exposed = True

```

5.4.21 Transaction Key Value Info Python Module

Transaciton Key Value Upload Base CherryPy.

```

class pacifica.metadata.rest.tkvinfo.TkvInfoAPI
    Transaction Key Value Info API.

    __init__()
        Create local objects for subtree items.

    exposed = True

```

5.4.22 Tkvupload Python Module

Core interface for the tkvupload metadata objects to interface with CherryPy.

```

class pacifica.metadata.rest.tkvupload.TkvUploadAPI
    InstrumentInfo API.

```

```
__init__()  
    Create local objects for subtree items.  
  
exposed = True
```

5.4.23 Transactioninfo Python Module

Core interface for transactioninfo metadata objects to interface with CherryPy.

```
class pacifica.metadata.rest.transactioninfo.TransactionInfoAPI  
    TransactionInfoAPI API.  
  
    __init__()  
        Create local objects for subtree items.  
  
    exposed = True
```

5.4.24 Userinfo Python Module

Core interface for the userinfo metadata objects to interface with CherryPy.

```
class pacifica.metadata.rest.userinfo.UserInfoAPI  
    UserInfo API.  
  
    __init__()  
        Create local objects for subtree items.  
  
    exposed = True  
  
pacifica.metadata.rest.userinfo.user_exists_decorator(func)  
    Wrap a method with user existence checking.
```

Rest module for the ORM utilizes CherryPy.

5.5 WSGI Python Module

The WSGI interface module for metadata.

5.6 Client Python Module

Metadata Client Module.

```
class pacifica.metadata.client.PMClient(url)  
    Pacifica Metadata Client.  
  
    This class provides client API to connect to the metadata service  
  
    __init__(url)  
        Constructor takes the url to the endpoint.  
  
    create(cls_type, set_hash)  
        Create the object of type based on hash.  
  
    delete(cls_type, query_hash)  
        Delete the object of type from query_hash.
```

get (*cls_type, query_hash*)

Get the object of type from query_hash.

headers = {'content-type': 'application/json'}

update (*cls_type, query_hash, set_hash*)

Update the object.

Update object of type returned from query_hash and set the values in set_hash

exception `pacifica.metadata.client.PMClientError`

Base Exception Error Class.

5.7 Admin Command Python Module

Admin Module for Admin Commands.

`pacifica.metadata.admin_cmd.bool2cmdint` (*command_bool*)

Convert a boolean to either 0 for true or -1 for false.

`pacifica.metadata.admin_cmd.create_subcommands` (*subparsers*)

Create the subcommands from the subparsers.

`pacifica.metadata.admin_cmd.create_table` (*args*)

Create a specific object.

`pacifica.metadata.admin_cmd.create_table_options` (*create_table_parser*)

Add the create object command line options.

`pacifica.metadata.admin_cmd.db_options` (*db_parser*)

Add the options for dbsync subcommand.

`pacifica.metadata.admin_cmd.dbchk` (*args*)

Check the database for the version running.

`pacifica.metadata.admin_cmd.dbchk_options` (*dbchk_parser*)

Add the options for dbchk.

`pacifica.metadata.admin_cmd.dbsync` (*_args=None*)

Create or update the database.

`pacifica.metadata.admin_cmd.delete_obj` (*args*)

Delete an object based on args.

`pacifica.metadata.admin_cmd.delete_obj_options` (*delete_obj_parser*)

Delete the object command line options.

`pacifica.metadata.admin_cmd.main` (**argv*)

Main method for admin command line tool.

`pacifica.metadata.admin_cmd.objstr_to_ormobj` (*obj_str*)

Convert a string to an orm object or raise ValueError.

`pacifica.metadata.admin_cmd.objstr_to_timedelta` (*obj_str*)

Turn an object string of the format X unit ago into timedelta.

`pacifica.metadata.admin_cmd.objstr_to_whereclause` (*obj_str*)

Convert a string to a where clause hash or raise ValueError.

`pacifica.metadata.admin_cmd.render_obj` (*args*)

Render an object based on args.

`pacifica.metadata.admin_cmd.render_options(render_parser)`
Add the essync command line options.

5.8 ElasticSearch Sync Python Module

Pacifica Metadata Module.

Metadata Module.

`pacifica.metadata.__main__.main()`
Main method to start the httpd server.

`pacifica.metadata.__main__.stop_later(doit=False)`
Used for unit testing stop after 10 seconds.

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