EthPM Registry Contracts Documentation

Release 2

ethpm

May 10, 2019

Registry:

CHAPTER 1

Install

```
$ npm install
$ docker pull ethereum/client-go:v1.8.6
```

CHAPTER 2

Test

```
$ npm test         # vs. ganache-cli
$ npm test:geth    # vs. geth
```

CHAPTER 3

Coverage

```
$ npm run coverage
```

CHAPTER 4

Lint

For help, see the *Solium documentation <https://github.com/duaraghav8/Solium>*.

```
$ npm run lint
```

4.1 Authority

4.2 IndexedOrderedSetLib

library **`IndexedOrderedSetLib`**

Title Library implementing an array type which allows O(1) lookups on values.

Author Piper Merriam <pipermerriam@gmail.com>

modifier **`requireValue`** (*IndexedOrderedSet storage self*, *bytes32 value*)

function **`size`** (*IndexedOrderedSet storage self*) *public*

Returns the size of the set

Parameters

- **`self`** – The set

function **`contains`** (*IndexedOrderedSet storage self*, *bytes32 value*) *public*

Returns boolean if the key is in the set

Parameters

- **`self`** – The set
- **`value`** – The value to check

function **`indexOf`** (*IndexedOrderedSet storage self*, *bytes32 value*) *public*

Returns the index of the value in the set.

Parameters

- **`self`** – The set
- **`value`** – The value to look up the index for.

function **`pop`** (*IndexedOrderedSet storage self*, *uint idx*) *public*

Removes the element at index idx from the set and returns it.

Parameters

- **`self`** – The set
- **`idx`** – The index to remove and return.

function **`remove`** (*IndexedOrderedSet storage self*, *bytes32 value*) *public*

Removes the element at index idx from the set

Parameters

- **`self`** – The set
- **`value`** – The value to remove from the set.

function **`get`** (*IndexedOrderedSet storage self*, *uint idx*) *public*

Retrieves the element at the provided index.

Parameters

- **`self`** – The set
- **`idx`** – The index to retrieve.

function **`add`** (*IndexedOrderedSet storage self*, *bytes32 value*) *public*

Pushes the new value onto the set

Parameters

- **`self`** – The set
- **`value`** – The value to push.

4.3 PackageDB

contract **`PackageDB`** is Authorized

Title Database contract for a package index package data.

Author Tim Coulter <tim.coulter@consensys.net>, Piper Merriam <pipermerriam@gmail.com>

mapping (bytes32 => Package) **`_recordedPackages`**

IndexedOrderedSetLib.IndexedOrderedSet **`_allPackageNameHashes`**

event **`PackageReleaseAdd`** (*bytes32 indexed nameHash*, *bytes32 indexed releaseHash*)

event **`PackageReleaseRemove`** (*bytes32 indexed nameHash*, *bytes32 indexed releaseHash*)

event **`PackageCreate`** (*bytes32 indexed nameHash*)

event **`PackageDelete`** (*bytes32 indexed nameHash*, *string reason*) *event* **`PackageOwnerUpdate`** (*bytes32 indexed nameHash*, *address indexed oldOwner*, *address indexed newOwner*)

modifier **`onlyIfPackageExists`** (*bytes32 nameHash*)

function **`setPackage`** (*string name*) *public*

Creates or updates a release for a package. Returns success.

Parameters

- **`name`** – Package name

function **`removePackage`** (*bytes32 nameHash*, *string reason*) *public*

Removes a package from the package db. Packages with existing releases may not be removed. Returns success.

Parameters

- **`nameHash`** – The name hash of a package.

function **`setPackageOwner`** (*bytes32 nameHash*, *address newPackageOwner*) *public*

Sets the owner of a package to the provided address. Returns success.

Parameters

- **`nameHash`** – The name hash of a package.
- **`newPackageOwner`** – The address of the new owner.

function **`packageExists`** (*bytes32 nameHash*) *public*

Query the existence of a package with the given name. Returns boolean indicating whether the package exists.

Parameters

- **`nameHash`** – The name hash of a package.

function **`getNumPackages`** () *public*

Return the total number of packages

function **`getPackageNameHash`** (*uint idx*) *public*

Returns package namehash at the provided index from the set of all known name hashes.

Parameters

- **`idx`** – The index of the package name hash to retrieve.

function **`getPackageData`** (*bytes32 nameHash*) *public*

Returns information about the package.

Parameters

- **`nameHash`** – The name hash to look up.

function **`getPackageName`** (*bytes32 nameHash*) *public*

Returns the package name for the given namehash

Parameters

- **`nameHash`** – The name hash to look up.

function **`getAllPackageIds`** (*uint _offset*, *uint limit*) *public*

Returns a slice of the array of all package hashes for the named package.

Parameters

- **`offset`** – The starting index for the slice.
- **`limit`** – The length of the slice

function **`hashName`** (*string name*) *public*

Returns name hash for a given package name.

Parameters

- **`name`** – Package name

4.4 PackageIndex

4.5 PackageIndexInterface

4.6 ReleaseDB

contract **`ReleaseDB`** is Authorized

Title Database contract for a package index.

Author Tim Coulter <tim.coulter@consensys.net>, Piper Merriam <pipermerriam@gmail.com>

mapping (bytes32 => Release) **`_recordedReleases`**

mapping (bytes32 => bool) **`_removedReleases`**

IndexedOrderedSetLib.IndexedOrderedSet **`_allReleaseIds`**

mapping (bytes32 => IndexedOrderedSetLib.IndexedOrderedSet) **`_releaseIdsByNameHash`**

mapping (bytes32 => string) **`_recordedVersions`**

mapping (bytes32 => bool) **`_versionExists`**

event **`ReleaseCreate`** (*bytes32 indexed releaseId*)

event **`ReleaseUpdate`** (*bytes32 indexed releaseId*)

event **`ReleaseDelete`** (*bytes32 indexed releaseId*, *string reason*)

modifier **`onlyIfVersionExists`** (*bytes32 versionHash*)

modifier **`onlyIfReleaseExists`** (*bytes32 releaseId*)

function **`setRelease`** (*bytes32 nameHash*, *bytes32 versionHash*, *string manifestURI*) *public*

Creates or updates a release for a package. Returns success.

Parameters

- **`nameHash`** – The name hash of the package.
- **`versionHash`** – The version hash for the release version.
- **`manifestURI`** – The URI for the release manifest for this release.

function **`removeRelease`** (*bytes32 releaseId*, *string reason*) *public*

Removes a release from a package. Returns success.

Parameters

- **`releaseId`** – The release hash to be removed
- **`reason`** – Explanation for why the removal happened.

function **`setVersion`** (*string version*) *public*

Adds the given version to the local version database. Returns the versionHash for the provided version.

Parameters

- **`version`** – Version string (ex: '1.0.0')

function **`getAllReleaseIds`** (*bytes32 nameHash*, *uint _offset*, *uint limit*) *public*

Returns a slice of the array of all releases hashes for the named package.

Parameters

- **`offset`** – The starting index for the slice.
- **`limit`** – The length of the slice

function **`getNumReleasesForNameHash`** (*bytes32 nameHash*) *public*

Get the total number of releases

Parameters

- **`nameHash`** – the name hash to lookup.

function **`getReleaseIdForNameHash`** (*bytes32 nameHash*, *uint idx*) *public*

Release hash for a Package at a given index

Parameters

- **`nameHash`** – the name hash to lookup.
- **`idx`** – The index of the release hash to retrieve.

function **`releaseExists`** (*bytes32 releaseId*) *public*

Query the existence of a release at the provided version for a package. Returns boolean indicating whether such a release exists.

Parameters

- **`releaseId`** – The release hash to query.

function **`releaseExisted`** (*bytes32 releaseHash*) *public*

Query the past existence of a release at the provided version for a package. Returns boolean indicating whether such a release ever existed.

Parameters

- **`releaseHash`** – The release hash to query.

function **`versionExists`** (*bytes32 versionHash*) *public*

Query the existence of the provided version in the recorded versions. Returns boolean indicating whether such a version exists.

Parameters

- **`versionHash`** – the version hash to check.

function **`getReleaseData`** (*bytes32 releaseId*) *public*

Returns the releaseData for the given release has a package.

Parameters

- **`releaseId`** – The release hash.

function **`getVersion`** (*bytes32 versionHash*) *public*

Returns string version identifier from the version of the given release hash.

Parameters

- **`versionHash`** – the version hash

function **`getManifestURI`** (*bytes32 releaseId*) *public*

Returns the URI of the release manifest for the given release hash.

Parameters

- **`releaseId`** – Release hash

function **`hashVersion`** (*string version*) *public*

Returns version hash for the given semver version.

Parameters

- **`version`** – Version string

function **`hashRelease`** (*bytes32 nameHash*, *bytes32 versionHash*) *public*

Returns release hash for the given release

Parameters

- **`nameHash`** – The name hash of the package name.
- **`versionHash`** – The version hash for the release version.

4.7 ReleaseValidator

contract **`ReleaseValidator`**

Title Database contract for a package index.

Author Piper Merriam <pipermerriam@gmail.com>

function **`validateRelease`** (*PackageDB packageDb*, *ReleaseDB releaseDb*, *address callerAddress*, *string name*, *string version*, *string manifestURI*) *public*

Runs validation on all of the data needed for releasing a package. Returns success.

Parameters

- **`packageDb`** – The address of the PackageDB
- **`releaseDb`** – The address of the ReleaseDB
- **`callerAddress`** – The address which is attempting to create the release.
- **`name`** – The name of the package.
- **`version`** – The version string of the package (ex: *1.0.0*)
- **`manifestURI`** – The URI of the release manifest.

function **`validateAuthorization`** (*PackageDB packageDb*, *address callerAddress*, *string name*) *public*

Validate whether the callerAddress is authorized to make this release.

Parameters

- **`packageDb`** – The address of the PackageDB

- **callerAddress** – The address which is attempting to create the release.
- **name** – The name of the package.

function **validateIsNewRelease** (*PackageDB packageDb*, *ReleaseDB releaseDb*, *string name*, *string version*) *public*

Validate that the version being released has not already been released.

Parameters

- **packageDb** – The address of the PackageDB
- **releaseDb** – The address of the ReleaseDB
- **name** – The name of the package.
- **version** – The version string for the release

uint constant **DIGIT_0**

uint constant **DIGIT_9**

uint constant **LETTER_a**

uint constant **LETTER_z**

bytes1 constant **DASH**

function **validatePackageName** (*PackageDB packageDb*, *string name*) *public*

Returns boolean whether the provided package name is valid.

Parameters

- **packageDb** – The address of the PackageDB
- **name** – The name of the package.

function **validateStringIdentifier** (*string value*) *public*

Returns boolean whether the input string has a length

Parameters

- **value** – The string to validate.

4.8 SemVersionLib

4.9 Appendix: Gas Usage

```
·------------------------------------------------------------------------------|---
↪-------------------------·
|                                        Gas                                   · ␣
↪Block limit: 6721975 gas  │
················································|·································|················
|  Methods                                      ·            6 gwei/gas        · ␣
↪    488.16 eur/eth         │
······················|·························|·········|···········|···········|···············|··
|  Contract           ·  Method                 ·  Min    ·  Max      ·  Avg      ·
↪# calls     ·  eur (avg)  │
······················|·························|·········|···········|···········|···············|··
|  PackageDB          ·  removePackage          ·      -  ·        -  ·    43401  · ␣
↪         3  ·       0.13  │
```

(continues on next page)

(continued from previous page)

```
·······················|·························|··········|···········|···········|···············|··
|  PackageDB           ·  setPackage            ·  29045  ·   174607  ·   116382  ·  ␣
↪        5  ·         0.34  │
·······················|·························|··········|···········|···········|···············|··
|  PackageDB           ·  setPackageOwner       ·      -  ·        -  ·    53768  ·  ␣
↪        3  ·         0.16  │
·······················|·························|··········|···········|···········|···············|··
|  PackageIndex        ·  release               ·  61302  ·  1084901  ·   542985  ·  ␣
↪       67  ·         1.59  │
·······················|·························|··········|···········|···········|···············|··
|  PackageIndex        ·  setPackageDb          ·  13711  ·    43702  ·    35990  ·  ␣
↪        6  ·         0.11  │
·······················|·························|··········|···········|···········|···············|··
|  PackageIndex        ·  setReleaseDb          ·  13909  ·    44098  ·    36343  ·  ␣
↪        6  ·         0.11  │
·······················|·························|··········|···········|···········|···············|··
|  PackageIndex        ·  setReleaseValidator   ·  27312  ·    43592  ·    40323  ·  ␣
↪        5  ·         0.12  │
·······················|·························|··········|···········|···········|···············|··
|  PackageIndex        ·  transferPackageOwner  ·  39416  ·    71980  ·    61083  ·  ␣
↪        3  ·         0.18  │
·······················|·························|··········|···········|···········|···············|··
|  ReleaseDB           ·  removeRelease         ·  73622  ·    84244  ·    81088  ·  ␣
↪        4  ·         0.24  │
·······················|·························|··········|···········|···········|···············|··
|  ReleaseDB           ·  setAuthority          ·  14602  ·    45703  ·    41531  ·  ␣
↪       19  ·         0.12  │
·······················|·························|··········|···········|···········|···············|··
|  ReleaseDB           ·  setOwner              ·      -  ·        -  ·    30373  ·  ␣
↪        2  ·         0.09  │
·······················|·························|··········|···········|···········|···············|··
|  ReleaseDB           ·  setRelease            ·  92285  ·   402299  ·   351358  ·  ␣
↪       28  ·         1.03  │
·······················|·························|··········|···········|···········|···············|··
|  ReleaseDB           ·  setVersion            ·  26710  ·   209149  ·   117459  ·  ␣
↪        3  ·         0.34  │
·······················|·························|··········|···········|···········|···············|··
|  ReleaseDB           ·  updateLatestTree      ·  62345  ·   125091  ·    80059  ·  ␣
↪       42  ·         0.23  │
·······················|·························|··········|···········|···········|···············|··
|  WhitelistAuthority  ·  setAnyoneCanCall      ·  44969  ·    46249  ·    46204  ·  ␣
↪       65  ·         0.14  │
·······················|·························|··········|···········|···········|···············|··
|  WhitelistAuthority  ·  setCanCall            ·  46952  ·    48232  ·    47959  ·  ␣
↪       15  ·         0.14  │
·······················|·························|··········|···········|···········|···············|··
|  Deployments                                  ·                                 ·
↪% of limit   ·             │
·················································|··········|···········|···········|···············|··
|  IndexedOrderedSetLib                         ·      -  ·        -  ·   442132  ·  ␣
↪     6.6 %  ·         1.29  │
·················································|··········|···········|···········|···············|··
|  PackageDB                                    ·      -  ·        -  ·  1414712  ·  ␣
↪      21 %  ·         4.14  │
·················································|··········|···········|···········|···············|··
|  PackageIndex                                 ·      -  ·        -  ·  4812689  ·  ␣
↪    71.6 %  ·        14.10  │
```

(continues on next page)

(continued from previous page)

```
··············································|·········|···········|···········|··············|··
|  ReleaseDB                                  ·      -  ·          -  ·    3254763  ·  ␣
↪   48.4 %  ·       9.53  │
··············································|·········|···········|···········|··············|··
|  ReleaseValidator                           ·      -  ·          -  ·    2467348  ·  ␣
↪   36.7 %  ·       7.23  │
··············································|·········|···········|···········|··············|··
|  SemVersionLib                              ·      -  ·          -  ·    1727350  ·  ␣
↪   25.7 %  ·       5.06  │
··············································|·········|···········|···········|··············|··
|  WhitelistAuthority                         ·      -  ·          -  ·     940365  ·  ␣
↪     14 %  ·       2.75  │
·---------------------------------------------|---------|-----------|-----------|---
↪-----------|--------------·
```

CHAPTER 5

Indices and tables

- genindex

Index